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SURFACE WATER SUPPLY
OF THE
PACIFIC SLOPE OF SOUTHERN CALIFORNIA

BY

H. D. McGLASHAN

Prepared in cooperation with
THE STATE OF CALIFORNIA

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

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SURFACE WATER SUPPLY OF THE PACIFIC SLOPE OF SOUTHERN CALIFORNIA.

By H. D. McGlashan.

INTRODUCTION.

Since 1848, when repairs to a mill race near Georgetown, Eldorado County, led to the discovery of gold in California, the industrial development of the State has been closely linked with the development and utilization of its water resources. Information concerning the quantity of water carried by the streams has been and will continue to be essential to the development of these resources, for the fundamental importance of stream-flow data is now so thoroughly recognized that it is almost impossible to finance any project depending on stream flow without presenting authentic records of flow covering a period of years.

On account of the pronounced differences in natural conditions—especially as regards topography, geologic formations, forests, and climate—stream-measurement work in southern California presents many problems not common to similar work in the central and northern parts of the State.

The rock formations have been badly shattered by extensive faulting and thus furnish great quantities of boulders. The soil is very porous and is easily eroded. The main drainage channels are comparatively short and in the mountainous sections have very steep slopes, so that during periods of high run-off the streams have excessive velocities. An interesting example is furnished by San Gabriel River, whose source is about 10,000 feet above sea level and whose mouth is approximately 50 miles distant in an air line. The maximum observed velocity for the measurement of San Gabriel River near Azusa on January 19, 1916, was 30 feet per second, and the mean velocity for the measurement was 22.2 feet. These high velocities produce marked changes in cross sections of channels at gaging stations.

The stream channels, even in the canyons, are unstable, and they scour and fill with unfailing regularity whenever there is a sudden change in run-off. The stream beds in the canyons are composed mainly of gravel and boulders, the size of the material depending on the slope of the channel. At the mouths of the canyons there are well-defined débris cones, where the larger part of the rolling débris is deposited. The stream channels from the débris cones to the sea

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are cut through fine gravels or soils of sandy loam and are subject to alluvial and erosional stream action which results in continual shifting and changing within the channel and, during floods, even in shifting of the channels themselves.

Except at the highest elevations the vegetation consists chiefly of brush interspersed with the usual growth found in similar arid regions. During the long dry seasons lightning and careless campers are the cause of many fires, which are, however, usually held in control by the efficient fire patrol of the United States Forest Service. Occasionally a fire gets beyond immediate control and burns over a small drainage basin. As a result the first heavy rainfall washes into the channels of the small streams much sand and fine gravel, at times filling them to the level of their banks with this material, which is gradually eroded after the flood stage has passed. (See Pl. XVI, *A*, p. 451.)

In this region there are two seasons—the rainy and the dry. The rainy season usually covers less than half the year, and the greater part of the rainfall occurs during the heavy storms that affect comparatively small areas. As a rule flood stages last only for short periods. [1]

INVESTIGATIONS OF STREAM FLOW IN CALIFORNIA.

The measurement of the flow of streams in California was begun by the California State engineer in 1878, in accordance with a law requiring him "to investigate the problems of the irrigation of the plains, the condition and capacity of the great drainage lines of the State, and the improvement of the navigation of rivers." The work was restricted to a few localities in the Sacramento and San Joaquin basins, the principal station being on the Sacramento at Collinsville.

The State engineer's office was discontinued in 1884, and practically no further stream studies were made until 1894, when engineers of the United States Geological Survey were sent into California and made a few measurements of streams in the semiarid parts of the State. The following year the Survey established a station on Sacramento River at Red Bluff and since that time it has gradually extended the work until it now has available records of flow at about 500 stations on California streams. Many records have also been collected by private persons. The first stations were located only on streams whose waters were to be used for irrigation, but records are now available on streams adapted to all uses, including navigation, domestic water supply, and power.

The investigations of the quantity of water in the streams have been supplemented by studies of the climatic and other conditions

[1] Records of precipitation for 106 stations in San Diego County, covering periods varying from 1 year to 65 years, are presented in connection with a discussion of the ground waters of the western part of the county by A. J. Ellis and C. H. Lee, published by the U. S. Geological Survey as Water-Supply Paper 446.

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affecting stream flow, and a mass of valuable information has thus been collected affording data for all phases of hydraulic work.

The stream-flow records collected by the Survey and cooperating parties up to the end of June, 1912, were assembled and published in 1912 and 1913 as three water-supply papers bearing titles as follows:

298. Water resources of California, Part I, Stream measurements in Sacramento River basin.
299. Water resources of California, Part II, Stream measurements in San Joaquin River basin.
300. Water resources of California, Part III, Stream measurements in Great Basin and Pacific coast river basins.

The records for the Pacific slope of southern California, including those published in Water-Supply Paper 300 and records collected up to September 30, 1918, are presented in this report. The area covered and the location of the gaging stations maintained are shown on the topographic maps forming Plates I and II (in pocket).

COOPERATION AND ACKNOWLEDGMENTS.

Cooperation in stream measurements between the United States Geological Survey and State of California was first provided for by the State legislature in an act approved March 16, 1903. This act covered the period from July 3, 1903, to June 30, 1905, and was in substance as follows:

The State Board of Examiners are hereby empowered to enter into contracts with the Director of the United States Geological Survey for the purpose of making topographic maps to the extent of twenty thousand dollars; also for the purpose of gaging streams; surveying reservoir sites and canal locations, for the conservation and utilization of the flood and storm waters of the State, to the extent of fifteen thousand dollars. * * *

Similar acts, approved March 20, 1905, and March 11, 1907, provided for the continuation of the work until June 30, 1909, with an increased biennial appropriation of $30,000 for topography and $20,000 for hydrography. The act of March 11, 1907, named the Department of Engineering of the State of California as the cooperating party.

An act placing cooperation between the State of California and the United States Geological Survey on a permanent basis was approved April 22, 1909, and provided as follows:

The Department of Engineering is hereby empowered to carry on topographic surveys and investigations into matters pertaining to the water resources of the State along the lines of hydrography, hydro-economics and the use and distribution of water for agricultural purposes, and to that end, where possible and to the best interest of the State, shall enter into contracts for cooperation with the different departments of the Federal Government in such amounts as may be an equitable and necessary division of the work. The State engineer, with the consent of the governor, may maintain and continue such investigations where there is available money not covered by

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cooperation contract. For the permanent maintenance of said surveys and investigations there is hereby continuously appropriated out of the general fund of the State treasury for each and every fiscal year, commencing with the date upon which this act becomes effective, the sum of thirty thousand dollars.

Of this sum $9,000 is allotted annually to investigations of water resources.

In 1911 the California Legislature provided for a State Board of Control (Water Powers) to pass on matters pertaining to the appropriation of water for power development, and for a Conservation Commission to investigate and collect information concerning forestry, water, and other natural resources and their use, for the purpose of revising the laws of the State relating thereto. The legislature of 1912 transferred the duties of the State Board of Control (Water Powers) to the State Water Commission.

The members of the Conservation Commission were George C. Pardee, chairman; Francis Cuttle, and J. P. Baumgarten; of the State Water Commission, Hiram W. Johnson, governor; Charles D. Marx, chairman; S. C. Graham; Harold T. Power; and W. F. McClure, State engineer. Louis R. Glavis was appointed secretary of both commissions and was later succeeded by Josephine A. Patten. These commissions made substantial appropriations for stream-gaging work in cooperation with the Geological Survey, and as a result a large number of new river-measurement stations were established and old stations were improved.

In the present work the State of California is represented by the Department of Engineering, State of California, W. F. McClure, State engineer, and the State Water Commission. The members of this commission are William D. Stephens, governor (ex officio); W. F. McClure, State engineer (ex officio); A. E. Chandler, president; W. A. Johnstone; and Irving Martin. Josephine A. Patten is secretary.

The United States Forest Service, United States Weather Bureau, United States Indian Office, Los Angeles County, the cities of San Diego and Santa Barbara, the Sweetwater Water Co., the Cuyamaca Water Co., and the Volcan Land & Water Co. have also cooperated, and assistance has been rendered and many complete records of stream flow furnished by other companies and private persons to whom credit is given in connection with the published data.

The earliest stream-gaging work in the State, beginning in 1878, was carried on under the direction of William Ham. Hall, State engineer, by A. Boschke and other assistant engineers, among whom was C. E. Grunsky, who continued in charge of office computation and frequently acted as hydrographer until the State Engineer's Department was abolished. Work by the United States Geological Survey was begun in 1894, under the direction of F. H. Newell, chief hydrographer, by Arthur P. Davis, and Joseph B. Lippincott. On the establishment of the United States Reclamation Service in 1902, Mr.

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Lippincott became supervising engineer for California, and the field work was continued under his direction by William B. Clapp and Samuel G. Bennett, until the separation of the Reclamation Service from the Geological Survey in 1906, when Mr. Clapp became district engineer. On Mr. Clapp's death in December, 1911, H. D. McGlashan was appointed district engineer.

DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity water, as run-off in depth in inches, acre-feet, and millions of cubic feet. The principal terms used in this report are second-feet, second-feet per square mile, run-off in inches, and acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the tables of convenient equivalents (p. 18).

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off (depth in inches)" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage.

"Miner's inch" represents a rate of flow and varies in different States, as noted in the table of convenient equivalents (p. 19). In California it was legalized by an act approved March 23, 1901, as one-fortieth of a second-foot. Prior to the passage of this act the common usage was one-fiftieth of a second-foot. The act reads as follows:

SECTION 1. The standard miner's inch of water shall be equivalent or equal to 1½ cubic feet of water per minute, measured through any aperture or orifice.

SEC. 2. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

SEC. 3. This act shall be in effect and force sixty days from and after its passage.

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One-fiftieth of a second-foot is still generally used in southern California.

The following terms not in common use are here defined:

"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge.

"Control," a term used to designate the natural section or stretch of the channel, or artificial structure below the gage that determines the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages. (See Pls. V and VI.)

The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over control.

EXPLANATION OF DATA.

The data presented in this report cover the climatic or water year beginning October 1 and ending September 30. At the 1st of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow, or in ponds, lakes, and swamps, and this stored water passes off in the streams during the spring break-up; at the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for a year beginning October 1 is practically all derived from precipitation in that year.

The base data collected at gaging stations (Pl. III, *B*) consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff gage or from a water-stage recorder (Pl. IV) that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter which is operated from a bridge, a car suspended on a cable, or by wading (Pl. VI, *C*), the method adopted depending on the conditions at the station. The general methods are outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage, and these rating tables, when applied to the gage heights, give the daily discharge from which the monthly and yearly mean discharge is determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving results of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

If the base data are insufficient to determine the daily discharge, tables giving daily gage heights and results of discharge measurements are published.

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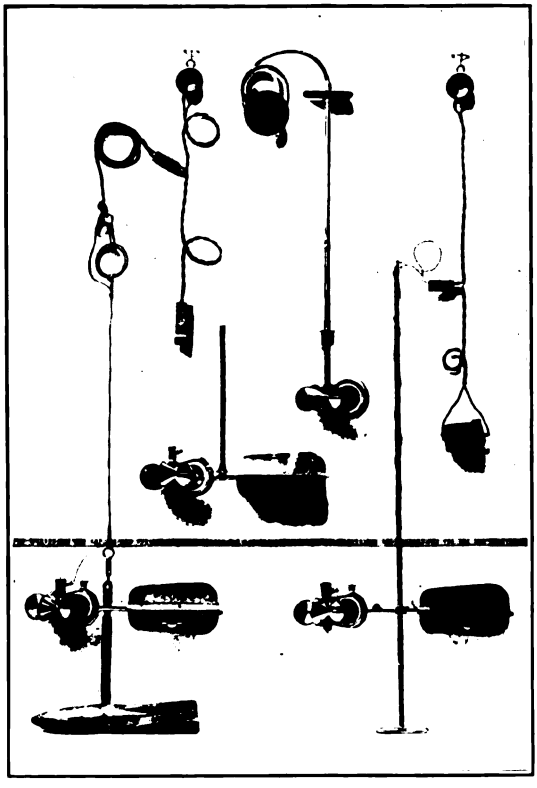
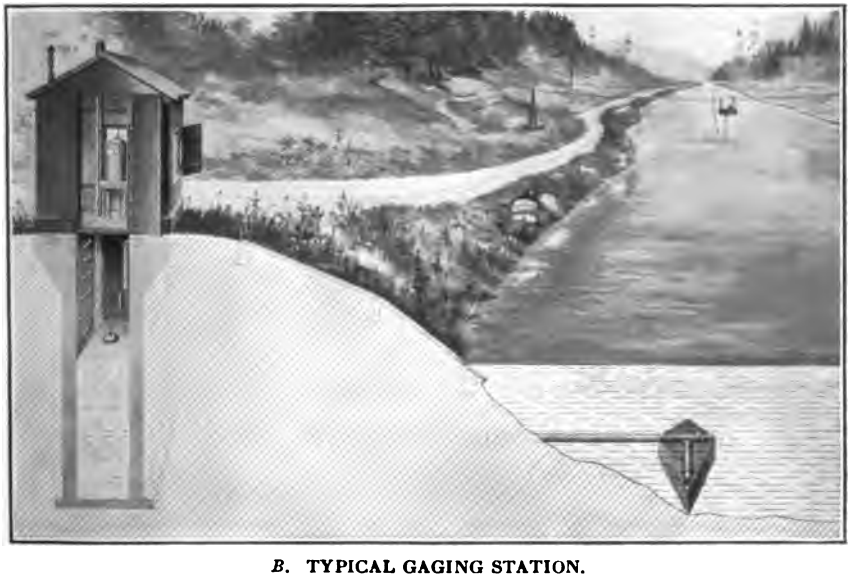


A. PRICE CURRENT METERS.



B. TYPICAL GAGING STATION.

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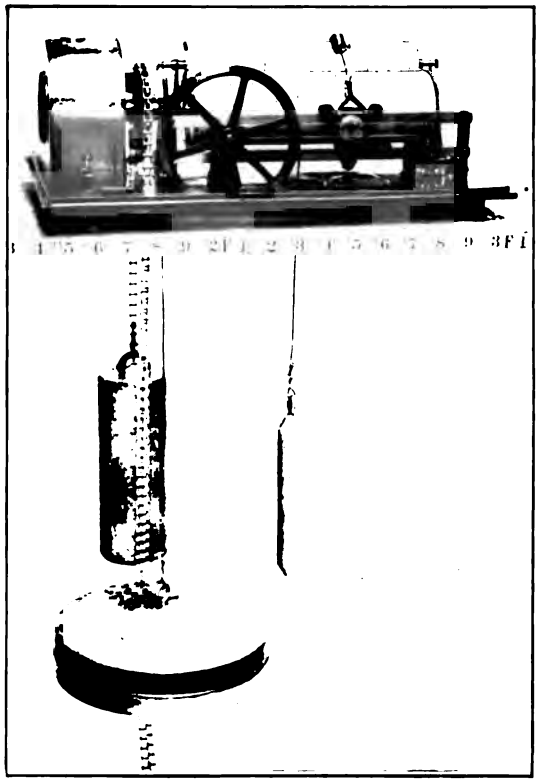
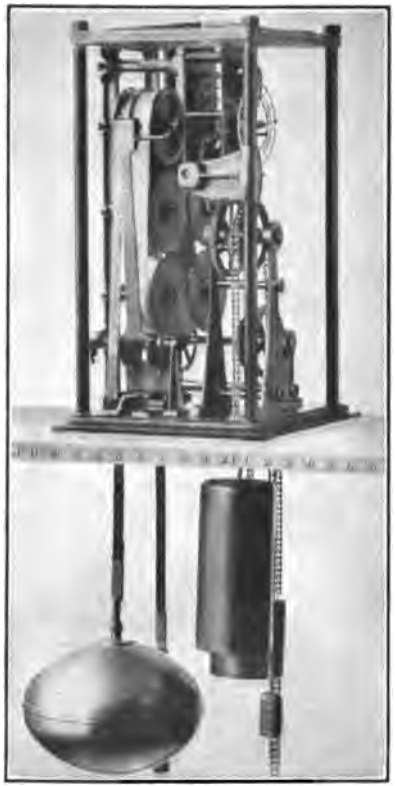
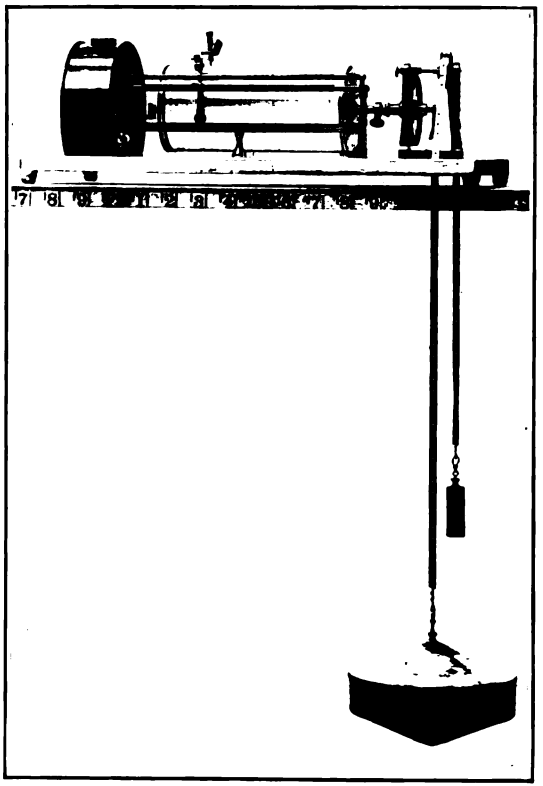


A. STEVENS CONTINUOUS.



B. GURLEY PRINTING.



C. FRIEZ.

WATER-STAGE RECORDERS.

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The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the constancy of the stage-discharge relation, covering such subjects as the shifting of control, and the cause and effect of backwater; it gives also information as to diversions that decrease the flow at the gage, artificial regulation, approximate elevation above sea level, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives the discharge in second-feet corresponding to the mean of the gage heights recorded each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. When such stations are equipped with water-stage recorders, the true mean daily discharge may be obtained by computing the mean daily gage height and applying it to the rating table, by averaging quantities of discharge for regular intervals during the day, or by means of a discharge integrator—an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than that given in the maximum column. Likewise, in the column headed "Minimum," the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. Computations recorded in the remaining columns are based on this average flow.

CONDITIONS AT GAGING STATIONS ON SOUTHERN CALIFORNIA STREAMS.

Natural as well as artificial conditions in southern California are very unfavorable for accurate stream gaging. At practically all points where gaging stations have been maintained the stage-discharge relation under natural conditions was continually changing. In establishing a gaging station a section of channel as favorable as possible is selected. On many streams the choice is confined to a short stretch on account of the intensive developments already made for power and irrigation.

Artificial controls.—In 1912 the first efforts were made to control the stage-discharge relation by artificial means in order to reduce the cost of maintenance of the stations and increase the accuracy of the records. The first experiment was made by driving short sec-

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tions of wooden sheet piling across the channel immediately downstream from the gage. A control constructed in this way was only temporary, as it was destroyed by the first high water, but it made conditions more stable during low water and indicated that more permanent construction would be justified.

The next type of control built consisted of short sections of concrete cut-off walls placed between large boulders, crossing the channel in a more or less irregular manner. The sharp granite sand continuously flowing over the crest eroded the concrete more rapidly than had been expected. Steel bands or angles, which were later embedded in the crest of the control, made this type of construction fairly successful. The top of a short section of the control near the bank was left a few tenths of a foot lower than the other sections in order to direct the low-water flow past the gage. (See Pl. V, *A*.) On several streams where there were no large boulders in the cross section to anchor the cut-off walls, a concrete weir has been built with a rectangular notch to carry the low-water discharge. (See Pl. V, *C*.) Some of these controls have been protected from gravel and boulders by bolting planks to the upstream or top face of the concrete. (See Pl. XII, *A* and Pl. XIV, *C*.)

Further study and experience indicated that certain changes in design were desirable. It was realized that an artificial control should conform as closely as practicable to the natural cross section, so as not to disturb the stream and create new and artificial conditions which nature would immediately set about to destroy. This led to a plan for a control projecting but a short distance above the channel and having a concave profile about the same as that of the bed. It eliminated the sharp break in the crest due to the notch for low-water flow and made the stage-discharge relation always sensitive to slight changes in discharge. (See Pl. VI, *B*.) These controls were usually built of granite boulders of various sizes, bound together with concrete and placed so as to give a triangular cross section with a fairly sharp crest. The use of boulders obtained from the stream bed resulted in greater durability and a slight saving in cost over concrete.

Controls built as described above materially improve the permanence of the stage-discharge relation and make possible the development of rating curves covering periods in which changes in stage are inconsiderable. There is a tendency for sand and gravel to collect immediately above and on each bank. This tendency is especially strong during seasons of comparatively low run-off. It is important that the gage or low-water section be placed close to the upstream side of the control.

Experiments are now being made with a double control—that is, two controls separated by a short stretch of channel. It appears that

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A.

B.

C.

CONCRETE CONTROLS.

A, **San Luis Rey River near Pala, Calif.;** ***B,*** **Sweetwater River near Dehesa, Calif.;** ***C,*** **Santa Ysabel Creek near Ramona, Calif.**

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A. CONTROL OF CONCRETE AND SOLID ROCK ON SANTA YSABEL CREEK NEAR MESA GRANDE, CALIF.

B. CONCRETE CONTROL ON SWEETWATER RIVER NEAR DESCANSO, CALIF.

C. WADING MEASUREMENT ON SAN GABRIEL RIVER NEAR AZUSA, CALIF.

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the upper control accelerates the water, so that it transports the gravel and sand over the lower control, and leaves a well-defined pool in which the gage is placed. (See Pl. XIV, *B*.)

Water-stage recorders.—On account of the improvement resulting from the construction of artificial controls it has been considered advisable to collect gage-height records at important stations with greater accuracy by installing water-stage recorders (see Pl. IV) that give a continuous record of stage. A record of this type is especially valuable during floods, as it not only indicates the time and duration of the maximum stage but furnishes a complete record from which the mean daily discharge may be accurately computed.

On account of conditions in the channels previously explained, water-stage recorders could not be installed in the usual manner as shown in Plate III, *B*. The intake pipe connecting the well with the stream would fill up with sand and fine gravel during the first rise and thus seal the well. Intake pipes have been eliminated by building the well and shelter flush with or projecting into the stream. A number of small openings at various elevations are left in the stream face of the well and may be cleaned out from the inside as required. In most places the well and shelter must be built of reinforced concrete, in order to withstand floods. A number of types of wells and shelters have been used in southern California (see Pls. XI–XV). The latest design is shown in Plate XI, *A*, and Plate XII, *B* and *C*.

ACCURACY OF FIELD DATA AND COMPUTED RECORDS.

The accuracy of stream-flow data depends primarily (1) on the permanence of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A paragraph in the description of the station or footnotes added to the tables gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage heights to the rating table to obtain the daily discharge.[1]

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and depth of run-off in inches

[1] For a more detailed discussion of the accuracy of stream-flow data see Grover, N. C., and Hoyt, J. C. Accuracy of stream-flow data: U. S. Geol. Survey Water-Supply Paper 400, pp 53–59, 1916.

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may be subject to gross errors caused by the inclusion of large non-contributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off (depth in inches)" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches. All figures representing "second-feet per square mile" and "run-off (depth in inches)" previously published by the Survey should be used with caution because of possible inherent but unknown sources of error.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge (second-feet per square mile).	Run-off (depth in inches).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.293
9	.33471	9.372	9.707	10.041	10.376

NOTE.—For part of a month multiply the run-off for one day by the number of days.

Table for converting discharge in second-feet into run-off in acre-feet.

Discharge (second-feet).	Run-off in acre-feet				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	1.983	55.54	57.52	59.50	61.49
2	3.967	111.1	115.1	119.0	123.0
3	5.950	166.6	172.6	178.5	184.5
4	7.934	222.1	230.1	238.0	246.0
5	9.917	277.7	287.6	297.5	307.4
6	11.90	333.2	345.1	357.0	368.9
7	13.88	388.8	402.6	416.5	430.4
8	15.87	444.3	460.2	476.0	491.9
9	17.85	499.8	517.7	535.4	553.4

NOTE.—For part of a month multiply the run-off for one day by the number of days.

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Table for converting discharge in second-feet into run-off in millions of cubic feet.

Discharge (second-feet).	Run-off in millions of cubic feet.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.0864	2.419	2.506	2.592	2.678
2	.1728	4.838	5.012	5.184	5.356
3	.2592	7.257	7.518	7.776	8.034
4	.3456	9.676	10.02	10.37	10.71
5	.4320	12.10	12.53	12.96	13.39
6	.5184	14.51	15.04	15.55	16.07
7	.6048	16.93	17.54	18.14	18.75
8	.6912	19.35	20.05	20.74	21.42
9	.7776	21.77	22.55	23.33	24.10

NOTE.—For part of a month multiply the run-off for one day by the number of days.

Table for converting discharge in second feet into run-off in millions of gallons.

Discharge (second-feet).	Run-off (millions of gallons).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.6463	18.10	18.74	19.39	20.04
2	1.293	36.20	37.48	38.78	40.08
3	1.939	54.30	56.22	58.17	60.12
4	2.585	72.40	74.96	77.56	80.16
5	3.232	90.50	93.70	96.95	100.2
6	3.878	108.6	112.4	116.3	120.2
7	4.524	126.7	131.2	135.7	140.3
8	5.171	144.8	149.9	155.1	160.3
9	5.817	162.9	168.7	174 5	180.4

NOTE.—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting velocity in feet per second into velocity in miles per hour.

[1 foot per second = 0.681818 mile per hour, or two-thirds mile per hour, very nearly; 1 mile per hour = 1.4668 feet per second. In computing the table the values 0.68182 and 1.4667 were used.]

Feet per second (units).	Miles per hour for tenths of foot per second.									
	0	1	2	3	4	5	6	7	8	9
0	0.000	0.068	0.136	0.205	0.273	0.341	0.409	0.477	0.545	0.614
1	.682	.750	.818	.886	.995	1.02	1.09	1.16	1.23	1.300
2	1.36	1.43	1.50	1.57	1.64	1.70	1.77	1.84	1.91	1.98
3	2.05	2.11	2.18	2.25	2.32	2.39	2.45	2.52	2.59	2.66
4	2.73	2.80	2.86	2.93	3.00	3.07	3.14	3.20	3.27	3.34
5	3.41	3.48	3.55	3.61	3.68	3.75	3.82	3.89	3.95	4.02
6	4.09	4.16	4.23	4.30	4.36	4.43	4.50	4.57	4.64	4.70
7	4.77	4.84	4.91	4.98	5.05	5.11	5.18	5.25	5.32	5.39
8	5.45	5.52	5.59	5.66	5.73	5.80	5.86	5.93	6.00	6.07
9	6.14	6.20	6.27	6.34	6.41	6.48	6.55	6.61	6.68	6.75

1 second-foot equals 40 California miner's inches (law of Mar. 23, 1901).

1 second-foot equals 38.4 Colorado miner's inches.

1 second-foot equals 40 Arizona miner's inches.

1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.

1 second-foot for one year (365 days) covers 1 square mile 1.131 feet, or 13.572 inches deep.

1 second-foot for one year (365 days) equals 31,536,000 cubic feet.

1 second-foot equals about 1 acre-inch per hour.

1 second-foot for one year (365 days) equals 724 acre-feet.

1 second-foot for one day equals 86,400 cubic feet.

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1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 California miner's inches equals 18.7 United States gallons per second.
100 California miner's inches for one day equals 4.96 acre-feet.
100 Colorado miner's inches equals 2.60 second-feet.
100 Colorado miner's inches equals 19.5 United States gallons per second.
100 Colorado miner's inches for one day equals 5.17 acre-feet.
100 United States gallons per minute equals 0.223 second-foot.
100 United States gallons per minute for one day equals 0.442 acre-foot.

GAGING STATIONS.

The following list comprises the gaging stations maintained in the south Pacific slope drainage basin in California from 1890 to September 30, 1918. The stations are arranged in downstream order, tributaries being indicated by indentation. A dash following the date implies that the station was being maintained October 1, 1918. The location of these stations is shown on the maps that form Plates I and II (in pocket).

Tia Juana River near Nestor, Calif., 1915.
    Cottonwood Creek near Dulzura, Calif., 1906–1915.
        Pine Valley Creek near Dulzura, Calif., 1906–7.
        Dulzura conduit near Dulzura, Calif., 1909–1915.
Sweetwater River near Descanso, Calif., 1905–
Sweetwater River near Dehesa, Calif., 1913–1916.
San Diego River at diverting dam near Lakeside, Calif., 1912–1916.
San Diego River at Lakeside, Calif., 1905–1916.
San Diego River near Santee, Calif., 1912–
San Diego River at San Diego, Calif., 1912–1916.
    Boulder Creek near Julian, Calif., 1912–
    Boulder Creek near Lakeside, Calif., 1912–1916.
    Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., 1912–
    Cuyamaca Water Co.'s flume near Lakeside, Calif., 1907–
    South Fork of San Diego River near Alpine, Calif., 1913–1915.
        South Fork of Cuyamaca Water Co.'s flume near Alpine, Calif., 1913–1915.
    San Vicente Creek at Foster, Calif., 1914–1917.
Santa Ysabel Creek (head of San Dieguito River) near Santa Ysabel, Calif., 1913–1915.
Santa Ysabel Creek near Mesa Grande, Calif., 1912–
Santa Ysabel Creek near Ramona, Calif., 1912–
Santa Ysabel Creek near Escondido, Calif., 1906–1912.
San Dieguito River at Bernardo, Calif., 1912–1916.
San Dieguito River near Bernardo, Calif., 1916–
San Dieguito River near Del Mar., Calif., 1912–1914.
    Black Canyon Creek near Mesa Grande, Calif., 1913–
    Temescal Creek near Almond, Calif., 1913–1915.
    East San Pasqual ditch near Escondido, Calif., 1912–1914.
    Guejito Creek near Escondido, Calif., 1915–1917.
    West San Pasqual ditch near Escondido, Calif., 1912–1915.
    Santa Maria Creek near Ramona, Calif., 1912–
San Luis Rey River near Warner Springs, Calif., 1913–1916.

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San Luis Rey River near Mesa Grande, Calif., 1911–
San Luis Rey River near Nellie, Calif., 1915–16.
San Luis Rey River near Pala, Calif., 1903–1916.
San Luis Rey River at Pala, Calif., 1912.
San Luis Rey River at Bonsall, Calif., 1912–1916.
San Luis Rey River near Bonsall, Calif., 1916–
San Luis Rey River near Oceanside, Calif., 1912–1914.
Canada Verde Creek near Warner Springs, Calif., 1913–1915.
Agua Caliente Creek near Warner Springs, Calif., 1913–1915.
West Fork of San Luis Rey River near Warner Springs, Calif., 1913–1915.
Matagual Creek near Warner Springs, Calif., 1912–1916.
Carrizo Creek near Warner Springs, Calif., 1913–1916.
Susanna Creek near Warner Springs, Calif., 1913–1916.
Escondido Mutual Water Co.'s canal near Nellie, Calif., 1896–
Rincon Indian Reservation ditch near Valley Center, Calif., 1912.
Pala Indian Reservation canal at Pala, Calif., 1912–13.
San Luis Rey ditch near San Luis Rey, Calif., 1913.
Temecula Creek (head of Santa Margarita River) near Temecula, Calif., 1906.
Santa Ana River near Mentone, Calif., 1896–
Southern California Edison Co.'s canal near Mentone, Calif., 1896–
Greenspot pipe line near Mentone, Calif., 1897–
Mill Creek in canyon at headworks of Crafton canal, Calif., 1897–1902.
Mill Creek at Forest Home, Calif., 1903–
Highlands canal near Mentone, Calif., 1901–1904.
Redlands canal near Mentone, Calif., 1901–1904.
Waterman Canyon Creek near San Bernardino, Calif., 1911–1914.
Devil Canyon Creek near San Bernardino, Calif., 1911–1914.
Lytle Creek at mouth of canyon near Rialto, Calif., 1894–1901.
Lytle Creek near San Bernardino, Calif., 1904–
San Jacinto River near Elsinore, Calif., 1916–
Elsinore Lake at Elsinore, Calif., 1915–
Temescal Creek near Elsinore, Calif., 1916–
San Antonio Creek near Claremont, Calif., 1917–
San Antonio Creek near Upland, Calif., 1901–1917.
Southern California Edison Co.'s canal near Claremont, Calif., 1917–
San Gabriel River above Fish Fork, near Azusa, Calif., 1900–1901; 1910; 1912. (Low-water records.)
San Gabriel River at headworks near Azusa, Calif., 1912–1914.
San Gabriel River near Azusa, Calif., 1894–
Fish Fork of San Gabriel River near Azusa, Calif., 1900–1901; 1910; 1912. (Low-water records.)
Iron Fork of San Gabriel River near Azusa, Calif., 1900–1901; 1910; 1912. (Low-water records.)
Coldwater Creek at weir above mouth, 1900.
West Fork of San Gabriel River above North Fork, 1900.
West Branch of North Fork of San Gabriel River at weir, 1900.
North Branch of North Fork of San Gabriel River at weir, 1900.
Southern California Edison Co.'s canal near Azusa, Calif., 1896–
Tunnel diversion near Azusa, Calif., 1917–
Rogers Creek near Azusa, Calif., 1917–
San Dimas Creek near San Dimas, Calif., 1916–
Fish Creek near Duarte, Calif., 1916–
Sawpit Creek near Monrovia, Calif., 1916–
Monrovia pipe-line near Monrovia, Calif., 1916–

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Los Angeles River at Los Angeles, Calif., 1896–1900.
Pacoima Creek near San Fernando, Calif., 1916–
Tujunga Creek near Sunland, Calif., 1916–
Haines Creek near Tujunga, Calif. 1917–
Arroyo Seco near Pasadena, Calif., 1910–
Eaton Creek near Pasadena, Calif., 1918–
Santa Anita Creek near Sierra Madre, Calif. 1916–
Little Santa Anita Creek near Sierra Madre, Calif., 1916–
Malibu Creek near Calabasas, Calif., 1903–1906.
Tujunga Creek near Calabasas Calif., 1903–1906.
Santa Clara River at Fillmore, Calif., 1911–1912.
Piru Creek near Piru, Calif., 1911–1913
Sespe Creek near Sespe, Calif., 1915–1918.
Sespe Creek at Sespe, Calif., 1911–1913.
Santa Paula Creek near Santa Paula, Calif., 1912–1913.
Ventura River near Nordhoff, Calif., 1911–1914.
Ventura River near Ventura, Calif., 1911–1914.
Gobernador Creek near Carpinteria, Calif., 1916–
Mission Tunnel near Santa Barbara, Calif., 1912–1917.
San Roqui near Santa Barbara, Calif., 1890.
San Jose near Goleta, Calif., 1890.
Loma Abajo River, Santa Barbara County, Calif., 1890.
Gato Creek at mouth, Santa Barbara County, Calif., 1890.
Santa Ynez River near Santa Barbara, Calif., 1903–1908; 1910–
Santa Ynez River near Lompoc, Calif., 1906–
Mono Creek near Santa Barbara, Calif., 1903–1904.
Santa Maria River near Santa Maria, Calif., 1903–1905.

TIA JUANA RIVER BASIN.

GENERAL FEATURES.

Tia Juana River discharges into the Pacific Ocean below San Diego Bay near the Mexican boundary. Its principal tributary, Cottonwood Creek, rises in the Laguna Mountains of the Coast Range, and flows south and west for about 20 miles, where it is joined by Pine Valley Creek from the north; it then flows southwestward 12 miles to its junction with Tia Juana River at the Mexican boundary, about 22 miles east of the coast line. The total drainage area of Cottonwood Creek above its junction with Tia Juana River is about 340 square miles. It lies south of the Sweetwater and Otay River basins and is the most southerly stream in San Diego County. Pine Valley Creek is its only important tributary.

The topography of the basin of Cottonwood Creek is rough throughout, although the basin contains some valley areas at elevations exceeding 3,000 feet; below this elevation the creek flows through a deep, narrow canyon, broken only by a short stretch of open country with comparatively light grade at the junction of Pine Valley Creek. Altitudes range from 600 feet above sea level where the creek forms Tia Juana River to 5,000 feet on the Laguna Mountains.

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The Cottonwood basin is very poorly forested. The timber consists of scattered oaks, cottonwoods, and alders, which are confined almost entirely to the small valleys along the stream and to the higher elevations. The mountain slopes are fairly well covered with brush.

The mean annual rainfall ranges from 8 to 10 inches along the foothills and from 20 to 30 inches in the mountains.

The basin affords several good reservoir sites—the Barrett reservoir, at the junction of Pine Valley Creek at an elevation of 1,500 feet; the Morena reservoir, on Cottonwood Creek, at the lower end of Morena Valley, 8 miles above the Barrett reservoir; and Pine Valley reservoir, on Pine Valley Creek, at the west end of Pine Valley. The Morena and Pine Valley reservoirs are at an elevation of 3,100 feet. All these sites have been surveyed. The Morena dam has been constructed, and considerable preliminary work has been done at the Barrett dam, including the building of a low concrete dam to a height of about 20 feet above the bed of the stream. A conduit has been constructed to divert water from Cottonwood and Pine Valley creeks above the Barrett dam to the lower Otay reservoir in the Otay River basin. This conduit has a capacity of about 60 second-feet and will divert all the water from these creeks when their combined discharge does not exceed that amount. The city of San Diego receives its water supply from the lower Otay reservoir.

GAGING-STATION RECORDS.

TIA JUANA RIVER NEAR NESTOR, CALIF.

LOCATION.—At highway bridge on line between secs. 3 and 4, T. 19 S., R 2 W., 3 miles above mouth of river, and 1¼ miles south of Nestor, San Diego County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 25 feet above sea level.

RECORDS AVAILABLE.—January 29 to September 30, 1915, when station was discontinued.

GAGE.—Gage heights were observed twice a day by measuring from top of bed plate of east truss of bridge to the water surface. These readings have been reduced to elevations above sea level, United States Geological Survey datum.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading. On account of angle which bridge makes with current all measurements made from bridge have been corrected by the coefficient 0.866.

CHANNEL AND CONTROL.—Composed of sand; shifting.

DIVERSIONS.—Dulzura conduit diverts from Cottonwood Creek about 12½ miles above its junction with Tia Juana River. There are no other large diversions above the station. Water is pumped for irrigation from wells in the valley above the station.

REGULATION.—The only storage developed in this drainage basin is at Morena reservoir (capacity, 46,000 acre-feet), on Cottonwood Creek, about 19 miles above its mouth.

ACCURACY.—Results are reported as good.

COOPERATION.—Complete record furnished by C. H. Lee, consulting engineer, Los Angeles.

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Discharge measurements of Tia Juana River near Nestor, Calif., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.[a]	Discharge.	Date.	Made by—	Gage height.[a]	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 29[b]	K. B. Sleppy	23.30	524	Mar. 3[b]	D. L. Lee	23.70	1,400
Feb. 5[b]	D. L. Lee	22.80	548	27	K. B. Sleppy	22.41	62
9[b]	K. B. Sleppy	22.17	84	Apr. 6	do	22.34	47
11[c]	D. L. Lee	25.60	2,700	10	D. L. Lee	22.28	32
14[b]	do	23.05	880	May 1	do	23.02	170
23[b]	do	23.06	506	June 7	do	21.86	1

[a] Gage heights are elevations above sea level, U. S. Geological Survey datum.
[b] Made from bridge; angle of current 30°; correction coefficient applied, 0.866, and flow of north channel added.
[c] Float measurement.

Daily discharge, in second-feet, of Tia Juana River near Nestor, Calif., for the year ending Sept. 30, 1915.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	.....	202	893	48	201	18	16	.....	918	381	29	185	.....
2	.....	620	2,361	48	638	18	17	.....	655	332	31	114	.....
3	.....	1,800	1,909	40	852	14	18	.....	627	283	18	102	.....
3	.....	1,245	1,539	40	934	14	19	.....	488	217	13	201	.....
5	.....	770	1,506	39	1,157	10	20	.....	455	160	11	160	.....
6	.....	306	1,324	39	1,414	2	21	.....	1,147	154	9	108	.....
7	.....	233	1,175	39	1,216	2	22	.....	975	119	10	72	.....
8	.....	131	1,026	32	975	.....	23	.....	728	92	21	61	.....
9	.....	95	952	26	957	.....	24	.....	567	92	23	45	.....
10	.....	168	1,026	30	834	.....	25	.....	713	72	28	61	.....
11	.....	3,061	1,059	25	424	.....	26	.....	877	58	25	39	.....
12	.....	1,921	909	25	363	.....	27	.....	770	58	15	31	.....
13	.....	1,608	860	24	242	.....	28	.....	729	58	10	25	.....
14	.....	1,313	721	23	340	.....	29	530	.....	58	12	23	.....
15	.....	1,032	613	22	267	.....	30	2,743	.....	58	27	23	.....
							31	806	.....	50	.....	18	.....

NOTE.—No flow Oct. 1 to Jan. 28 and June 8 to Sept. 30.

COTTONWOOD CREEK NEAR DULZURA,[1] CALIF.

LOCATION.—At Barrett dam, 1½ miles below intake of Dulzura conduit, in SW. ¼ sec. 15, T. 17 S., R. 3 E., about 7 miles northeast of Dulzura, San Diego County. Lyons Creek enters half a mile and Pine Valley Creek 1 mile above the station.

DRAINAGE AREA.—246 square miles (measured on topographic maps).

ELEVATION.—About 1,500 feet above sea level.

RECORDS AVAILABLE.—January 1, 1906, to December 31, 1915.

GAGE.—Several gages at independent datums have been installed. Two vertical staff gages used 1909–1915. Upper gage is fastened to upstream face of the dam on left bank; reads depth of water over crest: the lower gage, which is fastened to upstream face of dam between flume and right bank, is read when no water is flowing over crest of dam; its datum is 2.50 feet lower than that of the upper gage.

DISCHARGE MEASUREMENTS.—Made at low concrete dam back of which sand and gravel have been deposited to the level of its crest. At low stages the flow is restricted to a rectangular wooden flume through the wall of the dam, but at high stages the flow is over the entire length of the crest, which is 61 feet. Measurements have been made by wading, except at high stages, when only float measurements have been made. (See Pl. XVIII, *B*, p. 493.)

CHANNEL AND CONTROL.—Bed above and below dam consists principally of sand; shifting. The dam acts as control for the station.

[1] Described as "near Jamul" in early water-supply papers.

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Extremes of discharge.—1906–1915: Maximum mean daily discharge, 5,800 second-feet, March 24, 1906; channel usually dry several months each year.

Diversions.—Dulzura conduit diverts water from Cottonwood and Pine Valley creeks, half a mile above their junction, into Dulzura Creek drainage basin. See record of Dulzura conduit near Dulzura, Calif.

Regulation.—Morena reservoir on Cottonwood Creek, about 8 miles above Barrett dam, has a capacity of 46,000 acre-feet. Water stored in this reservoir is released when needed for Dulzura conduit.

Accuracy.—Discharge measurements have been made by the United States Geological Survey and rating curves developed for both gages. On account of the few measurements made in recent years, records since 1910 are not considered so reliable as those for earlier years.

Cooperation.—Records 1909–1911 furnished by Southern California Mountain Water Co., through M. M. O'Shaughnessy, chief engineer. Since the city of San Diego took over the system of the Southern California Mountain Water Co. in 1912, the records have been published as submitted through the department of water, except that determinations of daily discharges have been converted from million gallons per day to second-feet, and monthly discharge has been computed by the United States Geological Survey. Later records are withheld by city of San Diego on account of pending litigation.

Discharge measurements of Cottonwood Creek near Dulzura, Calif., for 1905–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1905.		*Feet.*	*Sec.-ft.*	1907.		*Feet.*	*Sec.-ft.*
Nov. 18	W. B. Clapp	.....	0.5	May 19	W. V. Hardy	0.37	34
Dec. 14	C. H. Lee	0.05	1.1	29	Hardy and Hall	.41	46
1906.				June 11	Clapp and Hardy	.28	22
Jan. 6	W. V. Hardy	.10	3.5	16	N. L. Hall	.....	27
19	do	.21	12.4	20	do	1.08	19
19	do	.30	32	27	W. V. Hardy	.89	14
20	do	.40	39	Dec. 6	do	.72	11
20	do	.50	63	1908.			
20	do	.55	76	Jan. 17	do	.81	14
Feb. 3	do	.05	4.1	27	do	1.95	52
14	do	.23	15.5	Feb. 14	do	2.30	62
Mar. 11	do	.12	13.2	23	do	1.97	43
12	do	1.21	383	Mar. 12	do	1.53	31
13	Joe Hooker	2.20	644	21	do	1.12	20
16	do	.82	150	Apr. 5	do	.91	17
21	do	.58	90	May 12	do	.73	11
24	do	6.00	5,330	Nov. 18	do	.....	1.6
25	do	6.50	4,100	Dec. 22	do	.....	4.3
31	do	1.10	416	1909.			
Apr. 7	do	.81	239	Feb. 24	do	2.55	90
19	W. V. Hardy	.59	116	Apr. 21	Clapp and Hardy	.55	7.8
May 8	do	.40	76	May 27	W. V. Hardy	.....	.5
June 22	C. H. Lee	.28	14.2	1910.			
Oct. 5	W. F. Martin	.....	1.0	Jan. 24	do	.50	5.7
Nov. 27	W. V. Hardy	.90	32	Mar. 13	do	.31	2.2
Dec. 15	do	2.00	40	June 5	do	.10	.4
1907.				1913.			
Jan. 5	do	2.25	56	Apr. 16	H. D. McGlashan	.23	2.3
15	do	.60	171	1915.			
Feb. 7	do	.38	50	Apr. 5	F. C. Ebert	.30	4.0
26	do	.48	59	Sept. 23	do	.30	1.0
Mar. 8	do	.80	191				
20	do	.60	89				
Apr. 12	do	.64	105				
27	do	.51	72				
28	do	.50	68				

Note.—The discharge measurements are referred to several gages at independent datum planes. For the measurements beginning with 1909 two gages were used, one being read at low stages, when the water flows through a 6-foot flume in the dam, and the other when the water flows over the crest of the dam. Some measurements were made with the 6-foot flume open and others with the flume closed. The difference in datum between the gages is 2.5 feet.

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Daily discharge, in second-feet, of Cottonwood Creek near Dulzura, Calif., for 1907–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1	.....	.....	.....	86	108	54	178	61	26	8.1	2.1	1.2
2	.....	.....	.....	42	98	44	145	61	28	7.2	2.5	.3
3 c	.....	.....	.....	46	84	64	306	52	30	6.2	2.3	1.4
4	.....	.....	.....	60	82	56	221	49	28	6.0	1.6	.7
5	.....	.....	.....	68	74	648	192	49	23	8.7	1.6	1.6
6	.....	.....	.....	130	64	383	169	61	29	4.4	1.3	1.5
7	.....	.....	.....	110	54	198	134	66	42	4.1	1.1	1.5
8	.....	.....	.....	92	54	155	121	61	42	3.6	1.1	1.0
9	.....	.....	.....	92	38	185	95	49	24	3.1	.4	1.0
10	.....	.....	.....	460	47	169	121	52	28	3.8	1.3	1.1
11	.....	.....	.....	221	36	134	108	49	26	4.8	1.3	.7
12	.....	.....	.....	121	54	134	105	54	40	4.2	.7	.5
13	.....	.....	.....	98	47	134	95	52	29	4.4	1.7	.8
14	.....	.....	.....	150	38	162	95	47	20	5.7	1.7	1.1
15	.....	.....	.....	112	52	162	98	40	36	4.2	.3	.5
16	.....	.....	.....	121	105	92	92	40	26	3.6	1.5	.6
17	.....	.....	.....	105	116	98	92	40	19	3.6	.2	.7
18	.....	.....	.....	1,170	76	92	87	38	18	3.6	.2	.7
19	.....	.....	.....	390	56	89	82	42	18	3.4	.1	.8
20	.....	.....	.....	221	54	87	71	36	18	2.9	1.6	1.1
21	.....	.....	.....	192	54	244	71	34	18	2.9	2.5	1.2
22	.....	.....	.....	178	87	178	71	30	18	2.9	.1	1.2
23	.....	.....	.....	139	87	178	76	38	19	2.2	1.2	1.3
24	.....	.....	.....	108	59	221	82	32	16	2.2	1.1	1.2
25	.....	.....	.....	121	56	285	84	38	14	2.2	1.1	1.2
26	.....	.....	.....	121	61	516	66	42	14	2.9	1.0	1.0
27	.....	.....	.....	98	79	313	69	30	14	3.6	.9	1.1
28	.....	.....	.....	98	54	264	64	44	14	4.4	1.3	.7
29	.....	.....	.....	95	.....	221	69	32	10	3.6	1.0	1.6
30	.....	.....	.....	250	.....	185	69	30	9	3.4	1.0	2.0
31	.....	.....	.....	121	.....	169	.....	28	.....	2.9	1.0	.....
1907–8.												
1	2.2	8.6	7.6	10	32	37	20	11	6.6	0.7	0.05	0.07
2	2.2	10	8.0	11	28	40	20	11	6.4	.7	.05	.07
3	2.2	9.6	7.6	11	130	44	20	20	6.6	.7	.40	.08
4	3.1	8.8	7.8	11	155	74	17	17	6.6	.6	.05	.13
5	3.7	8.2	8.2	10	62	69	17	17	6.4	.6	.50	.10
6	4.6	7.2	9.2	10	56	69	17	13	6.1	.3	.20	.06
7	5.9	7.8	9.2	9.6	56	62	15	8.6	6.3	.1	.06	.07
8	4.0	7.4	12	10	37	54	15	8.6	5.7	.1	.06	.07
9	4.3	8.0	10	9.6	63	42	15	8.2	5.5	.06	.06	.08
10	4.0	10	10	9.6	112	34	15	8.6	5.0	.02	.06	.09
11	4.0	10	11	9.2	98	32	14	9.6	3.7	.02	.06	.13
12	3.5	7.6	11	9.6	77	32	13	12	3.9	.02	.06	.23
13	3.5	7.4	10	9.8	73	30	13	13	2.6	.02	.06	.23
14	5.4	7.0	11	19	59	25	12	11	3.3	.02	.06	.24
15	6.8	9.2	10	22	59	25	12	11	3.1	.02	.06	.24
16	9.8	9.6	11	14	56	26	11	9.4	2.4	.02	.05	.25
17	13	11	11	13	56	26	10	7.0	2.3	.02	.05	.26
18	13	12	10	12	54	25	12	7.7	2.4	.02	.05	.26
19	10	12	10	12	46	24	10	8.2	2.4	.02	.05	.28
20	8.4	11	11	12	44	23	10	7.9	3.0	.02	.05	31
21	8.2	11	10	12	43	20	10	7.5	2.3	.03	.05	.31
22	9.4	8.6	10	12	43	23	24	7.7	2.0	.03	.05	.31
23	16	8.8	9.6	17	44	15	31	7.5	1.0	.03	.05	.31
24	16	9.2	9.6	48	40	17	28	7.7	2.0	.03	.05	.31
25	12	8.0	9.6	66	38	22	25	7.0	1.9	.04	.05	.32
26	8.6	7.2	9.4	79	35	31	17	6.4	1.7	.04	.05	.32
27	9.8	7.8	10	43	31	42	13	6.8	1.1	.04	.05	.32
28	11	7.6	9.2	86	34	37	12	6.6	1.1	.04	.06	.32
29	9.0	7.8	9.6	96	34	18	11	6.6	.8	.04	.06	.32
30	10	7.0	9.8	48	.....	18	11	6.6	.5	.05	.06	.32
31	9.8	.....	10	40	.....	20	.....	6.4	.....	.05	.06	.....

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Daily discharge, in second-feet, of Cottonwood Creek near Dulzura, Calif., for 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	0.32	4.0	5.0	8	27	43	132	6.0	2.0	1.5	.....	10
2	.32	3.8	5.5	8	17	36	122	4.0	2.0	1.5	.....	5.0
3	.32	3.6	8.6	8	8.1	39	111	4.0	2.0	1.0	.....	4.0
4	.33	3.6	7.2	8	29	22	92	4.0	2.0	1.0	.....	3.0
5	.33	3.7	5.7	8	7.0	20	92	4.0	2.0	1.0	.....	3.0
6	.33	3.8	6.0	8	8.1	17	78	3.2	2.0	1.0	9.0	7.0
7	.34	3.9	6.0	8	8.1	39	62	2.5	2.0	1.0	2.5	6.0
8	.34	4.0	5.5	8	159	25	49	4.0	2.0	1.0	1.0	3.0
9	.34	4.2	5.0	8	69	22	39	2.5	1.5	1.0	1.0	2.5
10	.35	4.6	4.8	12	39	20	36	3.2	1.5	1.0	1.0	1.5
11	.35	4.6	5.0	10	36	10	34	3.2	1.5	1.0	.....	1.5
12	.35	4.6	4.7	8	132	8.1	30	3.2	2.0	1.0	.....	1.0
13	.35	4.5	4.7	17	208	6.0	26	3.2	1.5	1.0	.....	1.0
14	.37	4.5	4.7	208	132	4.0	22	2.5	1.5	1.0	.5	.5
15	.39	4.3	5.4	56	132	4.0	17	2.5	1.5	.5	.5	.5
16	4.2	3.9	7.3	44	78	5.0	14	2.5	1.5	.5	5.0	.5
17	5.5	3.9	7.3	34	62	6.0	10	2.5	1.5	.5	2.5	.5
18	6.3	3.9	7.0	34	51	4.0	8.1	2.5	1.5	.3	2.0	.5
19	5.2	4.0	7.0	20	30	4.0	8.1	2.5	1.5	.4	10	.5
20	4.5	4.2	6.8	17	22	4.0	8.1	2.5	1.5	.....	4.0	.5
21	4.2	4.4	7.0	15	226	47	8.1	2.5	1.5	.....	1.5	.5
22	4.0	4.4	7.2	78	132	273	8.1	2.5	1.5	.....	1.0	.5
23	3.7	5.0	6.8	464	92	159	6.0	2.5	1.5	.....	.5	1.0
24	3.4	5.0	6.1	464	92	111	6.0	2.5	1.5	.3	.5	1.5
25	3.4	5.0	7.2	620	69	102	4.0	2.5	1.5	.3	.5	1.5
26	3.1	5.0	7.5	620	62	111	4.0	2.5	1.5	.3	.....	1.5
27	3.8	5.0	6.8	132	51	473	4.0	2.5	1.5	1.5	7.0	1.5
28	4.0	4.5	6.6	132	47	509	3.2	2.5	1.5	1.5	2.0	1.0
29	4.2	4.7	6.1	69	.....	438	9.2	2.5	1.0	.5	.5	1.0
30	4.3	4.7	6.1	51	.....	304	9.2	2.0	6.0	.....	17	1.0
31	4.5	.....	6.1	36	.....	273	.....	2.0	.....	.....	22	.....
1909–10.												
1	1.0	2.5	8.1	69	4.8	4.0	65	.8	.4	.1	.....	.....
2	1.0	2.5	12	33	4.0	3.8	54	.8	.5	.1	.....	.....
3	1.5	2.5	10	43	4.2	3.8	49	.7	.5	.1	.....	.....
4	2.0	2.5	8.1	23.4	4.8	3.8	27.3	1.3	.5	.....	.....	.....
5	1.5	2.5	20	78	4.4	3.1	7.0	1.2	.4	.....	.....	.....
6	1.5	2.5	15	45	4.4	3.1	4.4	2.1	.3	.....	.....	.....
7	1.5	2.5	6.0	31.5	4.4	3.6	4.2	2.3	.4	.....	.....	.....
8	1.0	2.5	6.0	27.3	3.8	2.5	3.6	2.1	.3	.....	.....	.....
9	.5	6.0	92	24.7	3.0	3.3	3.6	1.0	.2	.....	.....	.....
10	.5	6.0	30	18.3	2.6	3.1	3.1	1.0	.2	.....	.....	.....
11	11	8.1	6.0	22.1	3.3	3.0	2.6	1.0	.2	.....	.....	.....
12	1.0	10	4.0	23.4	2.6	2.5	4.0	.8	.2	.....	.....	.....
13	.5	9.2	2.5	14.7	2.5	2.5	3.8	1.0	.2	.....	.....	.....
14	.5	12	2.5	24.7	2.6	2.6	2.5	1.0	.2	.....	.....	.....
15	.5	18	2.5	31.5	3.0	2.6	2.3	1.0	1.0	.....	.....	.....
16	.5	10	2.5	190	2.8	2.6	2.5	1.0	1.0	.....	.....	.....
17	.5	9.2	2.5	145	2.3	3.1	2.2	1.0	1.0	.....	.....	.....
18	1.0	8.1	2.5	43	2.6	4.4	2.2	1.0	.5	.....	.....	.....
19	1.5	8.1	2.5	34.5	4.4	3.1	1.3	.8	.4	.....	.....	.....
20	1.5	7.0	12	26	23.4	2.6	1.3	1.0	.3	.....	.....	.....
21	1.5	7.0	190	15.9	12.9	2.6	1.3	1.0	.1	.....	.....	.....
22	1.5	8.1	18	12.5	5.0	2.6	1.3	1.0	.3	.....	.....	.....
23	1.5	8.1	8.1	8.3	4.0	2.6	1.0	.7	.2	.....	.....	.....
24	1.5	8.1	10	6.0	4.0	2.6	7.0	.7	2	.....	.....	.....
25	1.5	8.1	6.0	7.7	4.2	2.6	1.1	.7	.2	.....	.....	.....
26	1.5	34	6.0	6.0	4.0	8.5	1.1	.5	.2	.....	.....	.....
27	1.5	30	4.0	5.2	4.0	14.7	.8	.5	.1	.....	.....	.....
28	1.5	16	4.0	5.0	3.1	69	1.1	.4	.1	.....	.....	.....
29	1.5	12	3.2	4.2	.....	54	.8	.5	.1	.....	.....	.....
30	2.0	10	3.2	4.4	.....	36	.7	.4	.1	.....	.....	.....
31	2.0	.....	4.0	4.0	.....	37.5	.....	.3	.....	.....	.....	.....

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Daily discharge, in second-feet, of Cottonwood Creek near Dulzura, Calif., for 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	.....	1.3	2.2	3.4	3.7	2.2	1.1	1.0	1.7	.....	.....	.....
2	.....	1.8	2.2	3.4	2.6	2.2	1.5	1.1	1.7	.....	.....	.....
3	.....	3.1	2.1	3.4	3.7	3.7	1.4	1.0	1.7	.....	.....	.....
4	.....	5.0	2.1	2.6	2.8	13	1.4	1.1	1.4	.....	.....	.....
5	.....	3.1	2.5	2.6	35	7.2	1.4	1.0	1.3	.....	.....	.....
6	.....	2.2	2.5	2.6	3.7	2.4	1.4	1.0	1.2	.....	.....	.....
7	.....	2.2	2.2	2.0	3.7	2.0	1.5	1.0	.7	.....	.....	.....
8	.....	2.2	2.2	2.0	3.7	2.0	1.4	.8	.7	.....	.....	.....
9	.....	2.2	2.2	2.6	4.6	2.0	1.5	.8	.5	.....	.....	.....
10	.....	1.8	2.2	11	4.6	3.0	1.4	.8	.4	.....	.....	.....
11	.....	1.8	2.1	8.6	3.7	5.4	1.1	.8	.2	.....	.....	.....
12	.....	2.2	1.8	3.1	3.4	2.3	1.1	.8	.2	.....	.....	.....
13	.....	3.1	1.8	3.1	3.1	2.0	1.1	.8	.2	.....	.....	.....
14	.....	7.7	2.2	2.8	22	2.0	1.0	1.5	.2	.....	.....	.....
15	.....	4.8	1.8	3.1	5.9	1.5	1.0	1.0	.2	.....	.....	.....
16	.....	3.6	1.8	2.6	3.7	1.5	1.0	1.1	.2	.....	.....	.....
17	.....	2.6	2.1	2.5	3.6	1.4	1.0	.8	.2	.....	.....	.....
18	.....	2.3	2.1	2.5	3.1	1.1	1.0	.8	.2	.....	.....	.....
19	0.1	3.8	2.2	2.3	2.3	1.1	1.0	.7	.2	.....	.....	.....
20	.2	2.5	3.1	2.3	3.1	1.1	1.0	.7	.2	.....	.....	.....
21	.3	3.3	2.3	2.3	2.5	1.4	1.1	1.3	.2	.....	.....	.....
22	.2	2.3	2.3	2.3	2.0	1.4	1.0	1.3	.2	.....	.....	.....
23	.5	2.2	2.2	2.3	2.0	1.4	1.1	1.3	.2	.....	.....	.....
24	.5	2.2	2.2	2.3	2.0	1.1	1.0	1.0	.2	.....	.....	.....
25	.4	2.2	2.1	2.3	1.9	1.1	1.1	.8	.2	.....	.....	.....
26	.5	2.6	2.6	2.3	1.5	1.1	1.5	1.0	.2	.....	.....	.....
27	.5	2.3	1.8	2.3	2.3	1.1	1.5	.7	.1	.....	.....	.....
28	.8	2.3	2.1	2.3	2.6	1.1	1.5	1.3	.0	.....	.....	.....
29	1.0	2.3	1.7	2.6	.....	1.1	1.0	1.0	.0	.....	.....	.....
30	1.1	2.5	1.7	2.6	.....	1.1	1.0	1.0	.0	.....	.....	.....
31	1.2	.....	2.5	3.7	.....	1.1	.....	1.0	.....	.....	.....	.....
1911–12.												
1	.....	.....	0.1	2.0	1.3	2.0	3.0	1.7	0.4	0.4	.....	.....
2	.....	.....	.1	1.8	1.5	1.5	2.0	1.7	.4	.9	.....	.....
3	.....	.....	.1	1.8	1.3	1.5	2.0	1.5	.5	1.5	.....	.....
4	.....	.....	.1	1.7	1.5	1.5	2.0	1.5	.4	1.3	.....	.....
5	.....	.....	.6	1.7	1.3	1.5	2.0	1.5	.4	.4	.....	.....
6	.....	.....	.6	1.7	1.3	2.4	2.0	1.5	.4	.3	.....	.....
7	.....	.....	.6	1.7	1.3	1.7	1.8	1.7	.5	.5	.....	.....
8	.....	.....	.6	1.5	1.3	1.7	1.7	2.4	.5	.5	.....	.....
9	.....	.....	.6	1.7	1.3	2.7	2.0	3.8	.5	.1	.....	.....
10	.....	.....	.9	1.7	1.3	221	2.0	2.4	.5	.....	.....	.....
11	.....	.....	.9	2.0	1.3	11.6	32.9	1.8	.5	.....	.....	.....
12	.....	.....	.9	2.0	1.3	5.0	113	1.7	.5	.....	.....	.....
13	.....	.....	.9	1.7	1.3	39.2	73.0	1.5	.5	.....	.....	.....
14	.....	.....	.9	1.7	1.5	8.6	54.0	1.3	.4	.....	.....	.....
15	.....	.....	.9	2.0	1.5	4.2	48.0	1.3	.4	.....	.....	.....
16	.....	.....	.9	2.2	1.5	3.0	40.0	1.3	.4	.....	.....	.....
17	.....	.....	1.5	2.4	1.3	2.0	25.0	1.3	.4	.....	.....	.....
18	.....	.....	1.5	3.0	1.3	1.8	16.0	.9	.3	.....	.....	.....
19	.....	.....	1.5	4.2	1.3	1.7	10.1	.9	.3	.....	.....	.....
20	.....	.....	1.5	3.0	1.2	1.8	4.2	.7	.4	.....	.....	.....
21	.....	.....	1.5	2.0	1.3	1.8	3.0	.7	.4	.....	.....	.....
22	.....	.....	1.5	1.8	1.3	2.2	2.7	.9	.3	.....	.....	.....
23	.....	.....	1.5	1.5	1.3	1.7	2.5	.9	.9	.....	.....	.....
24	.....	.....	1.5	1.7	1.3	1.7	2.0	.9	.7	.....	.....	.....
25	.....	.....	1.5	1.5	1.3	1.7	1.7	.9	.7	.....	.....	.....
26	.....	.....	1.5	1.7	1.2	2.0	1.7	.9	.5	.....	.....	.....
27	.....	.....	1.5	1.7	1.2	2.0	2.0	.9	.5	.....	.....	.....
28	.....	.....	1.5	1.7	1.2	2.0	2.0	.7	.3	.....	.....	.....
29	.....	.....	1.5	1.5	1.0	2.0	2.0	.6	.5	.....	.....	.....
30	.....	.....	1.5	1.5	.....	26.5	1.7	.6	.3	.....	.....	.....
31	.....	.....	1.5	1.5	.....	5.2	.....	.5	.....	.....	.....	.....

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Daily discharge, in second-feet, of Cottonwood Creek near Dulzura, Calif., for 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	.....	0.0	1.0	1.3	1.0	2.9	8.5	2.0	0.6	.....	.....	.....
2	.....	.0	1.0	1.3	1.0	2.0	6.6	2.0	.6	.....	.....	.....
3	.....	.0	.9	1.3	1.0	1.7	4.3	2.0	.6	.....	.....	.....
4	.....	.0	.7	1.3	1.0	1.5	2.5	1.8	.6	.....	.....	.....
5	.....	.0	.9	1.3	1.4	1.5	2.4	1.8	.6	.....	.....	.....
6	.....	.0	.9	1.3	1.4	1.5	2.2	1.8	.6	.....	.....	.....
7	.....	.0	1.0	1.3	1.4	1.5	2.4	1.5	.6	.....	.....	.....
8	.....	.0	.9	1.3	1.5	1.4	2.2	1.4	.5	.....	.....	.....
9	.....	.0	1.0	1.7	1.4	1.4	2.2	1.2	.5	.....	.....	.....
10	.....	.2	1.2	1.7	1.2	1.4	2.2	1.2	.5	.....	.....	.....
11	.....	.3	1.2	1.7	1.2	1.5	2.4	1.2	.5	.....	.....	.....
12	.....	.3	1.3	1.5	1.2	1.8	2.4	1.2	.5	.....	.....	.....
13	.....	.3	1.3	1.5	1.2	1.5	2.5	1.2	.4	.....	.....	.....
14	.....	.4	1.2	1.3	1.2	1.4	2.7	1.2	.4	.....	.....	.....
15	.....	.5	1.2	1.8	1.2	1.4	2.7	1.0	.4	.....	.....	.....
16	.....	.9	1.2	2.4	1.2	1.4	2.7	1.0	.3	.....	.....	.....
17	.....	.9	1.3	2.4	1.2	1.2	2.5	1.0	.3	.....	.....	.....
18	.....	.9	1.3	1.7	1.2	1.4	2.5	1.0	.3	.....	.....	.....
19	.....	.9	1.3	1.5	1.4	1.4	2.4	.9	.3	.....	.....	.....
20	.....	1.0	1.3	1.5	1.8	1.5	2.4	.7	.2	.....	.....	.....
21	.....	.9	1.3	1.5	2.2	1.5	2.0	.6	.2	.....	.....	.....
22	.....	.9	1.3	1.7	29	1.5	2.0	.6	.2	.....	.....	.....
23	.....	.9	1.3	1.5	3.4	1.5	2.0	.6	.2	.....	.....	.....
24	.....	.7	1.3	1.5	2.0	3.2	1.8	.4	.2	.....	.....	.....
25	.....	.7	1.3	1.5	10	1.7	1.8	.4	.2	.....	.....	.....
26	.....	1.0	1.3	1.5	2.5	1.5	1.8	.4	.0	.....	.....	.....
27	.....	1.2	1.3	1.5	6.6	1.4	1.8	.4	.0	.....	.....	.....
28	.....	1.3	1.3	1.2	2.5	1.4	2.0	.6	.0	.....	.....	.....
29	.....	1.0	1.3	1.2	.....	1.4	2.0	.4	.0	.....	.....	.....
30	.....	1.2	1.3	1.0	.....	1.8	2.0	.4	.0	.....	.....	.....
31	.....	.....	1.3	1.0	.....	6.3	.....	.4	.....	.....	.....	.....
1913–14.												
1	.....	.....	2.0	1.2	2.0	2.0	1.1	1.7	1.1	.....	.....	.....
2	.....	.....	2.0	1.2	2.0	2.0	1.1	1.7	1.1	.....	.....	.....
3	.....	.....	1.7	2.0	2.0	1.7	1.1	1.4	1.0	.....	.....	.....
4	.....	.....	1.7	1.4	1.7	1.7	1.1	1.2	.7	.....	.....	.....
5	.....	.....	1.8	1.1	1.7	1.5	1.1	1.1	.7	.....	.....	.....
6	.....	.....	1.8	1.1	1.7	1.4	1.1	1.0	.7	.....	.....	.....
7	.....	.....	1.7	1.1	1.7	1.4	1.1	1.0	.7	.....	.....	.....
8	.....	.....	1.7	1.1	1.7	1.4	1.1	1.0	2.0	.....	.....	.....
9	.....	.....	1.6	1.1	1.7	1.4	1.1	1.0	2.0	.....	.....	.....
10	.....	.....	1.6	1.1	1.4	1.4	1.1	1.0	2.0	.....	.....	.....
11	.....	.....	1.6	1.1	1.4	1.4	1.1	1.0	1.4	.....	.....	.....
12	.....	.....	1.7	1.1	1.4	1.4	1.1	1.0	.7	.....	.....	.....
13	.....	.....	1.7	1.1	1.4	1.4	1.0	1.0	.6	.....	.....	.....
14	.....	.....	1.8	1.1	1.4	1.4	1.0	1.0	.5	.....	.....	.....
15	.....	.....	1.8	1.1	1.4	1.4	1.0	1.0	.4	.....	.....	.....
16	.....	.....	1.8	1.7	1.4	1.4	1.0	1.0	.2	.....	.....	.....
17	.....	.....	1.8	1.7	1.5	1.1	1.0	1.0	.2	.....	.....	.....
18	.....	.....	1.4	2.0	1.5	1.1	.8	.8	.2	.....	.....	.....
19	.....	.7	1.1	2.0	13	1.1	.7	.7	.2	.....	.....	.....
20	.....	.7	1.1	1.7	19	1.1	.6	.7	.4	.....	.....	.....
21	.....	1.6	1.2	1.7	429	1.1	.6	.7	.3	.....	.....	.....
22	.....	1.7	1.4	1.4	202	1.1	.7	.7	.3	.....	.....	.....
23	.....	1.2	1.6	1.4	30	1.1	1.2	.7	.3	.....	.....	.....
24	.....	1.1	1.4	1.4	6.8	1.1	1.2	.7	.2	.....	.....	.....
25	.....	1.1	1.4	1.4	3.4	1.1	1.1	.7	.2	.....	.....	.....
26	.....	1.1	1.4	2.4	2.6	1.6	1.1	.7	.1	.....	.....	.....
27	.....	1.2	1.4	6.3	2.3	1.4	1.0	.7	.....	.....	.....	.....
28	.....	1.2	1.2	52	2.0	1.1	1.0	.7	.....	.....	.....	.....
29	.....	1.2	1.2	3.4	.....	1.1	1.4	.7	.....	.....	.....	.....
30	.....	1.5	1.2	2.0	.....	1.1	1.7	1.1	.....	.....	.....	.....
31	.....	.....	1.2	2.0	.....	1.1	.....	1.1	.....	.....	.....	.....

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Daily discharge, in second-feet, of Cottonwood Creek near Dulzura, Calif., for 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	.....	.....	.....	0.70	12.2	82	5.3	76	4.9	2.6	2.5	3.7
2	.....	.....	0.35	.70	74	115	5.0	95	6.6	2.5	2.4	3.7
3	.....	.....	.35	.70	100	82	4.6	96	4.7	2.5	2.2	3.7
4	.....	.....	.35	.70	29	78	4.3	104	4.1	2.5	2.3	3.7
5	.....	.....	.35	.70	9.4	75	4.4	257	3.8	2.5	2.2	3.7
6	.....	.....	.35	.70	3.7	65	5.4	176	3.6	2.3	2.0	3.7
7	.....	.....	.35	.70	2.0	62	5.0	130	3.5	2.2	2.0	3.7
8	.....	.....	.35	.70	1.2	46	4.9	118	3.4	2.2	1.9	3.7
9	.....	.....	.35	.70	.43	33	4.6	102	3.3	2.2	1.9	3.7
10	.....	.....	.35	.70	81	31	4.4	495	3.3	2.3	1.8	3.7
11	.....	.....	.35	.70	488	30	4.3	80	3.3	2.3	1.7	3.7
12	.....	.....	1.20	.70	190	19.6	4.3	67	3.3	2.2	1.6	3.7
13	.....	.....	.70	.70	112	13.8	7.0	64	3.2	2.2	1.9	3.7
14	.....	.....	.56	.70	83	10.9	9.8	42	3.2	2.1	3.7	3.7
15	.....	.....	.56	.70	65	8.9	5.7	35	3.0	2.1	3.7	3.7
16	.....	.....	.56	.70	42	7.8	6.2	28	2.9	2.2	3.7	3.7
17	.....	.....	1.30	.70	43	6.7	5.3	25	2.9	2.1	3.7	3.7
18	.....	.....	1.70	.70	20	5.1	5.4	45	3.0	2.1	3.7	3.7
19	.....	.....	1.30	.70	18.2	5.3	4.7	33	2.8	2.1	3.7	3.6
20	.....	.....	1.30	.70	43	4.6	4.6	22	2.9	1.9	3.7	3.4
21	.....	.....	.70	.70	60	4.8	5.1	14.7	2.8	1.9	3.7	3.3
22	.....	.....	.70	1.30	68	4.1	11.2	10.5	2.8	2.0	3.7	2.8
23	.....	.....	.70	.70	44	3.1	8.6	27	2.8	2.0	3.7	2.7
24	.....	.....	.70	.70	22	2.9	9.9	22	2.8	2.0	3.7	3.0
25	.....	.....	.70	.70	32	2.9	4.9	7.1	2.8	2.5	3.7	3.6
26	.....	.....	.70	.70	23	2.9	5.4	5.9	2.8	2.5	3.7	4.4
27	.....	.....	.70	.70	14.3	3.3	5.1	5.1	2.8	2.5	3.7	4.4
28	.....	.....	.70	1.00	10.2	3.2	5.4	4.8	2.6	2.4	3.7	4.2
29	.....	.....	.70	169	.....	3.4	7.5	4.7	2.5	2.5	3.7	4.0
30	.....	.....	.70	141	.....	4.4	65	4.5	2.6	2.7	3.7	3.9
31	.....	.....	.70	39.	.....	5.4	.....	4.3	.....	2.7	3.7	.....

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1915.				1915.				1915.			
1	3.9	3.4	6.3	11	3.4	4.0	6.7	21	3.7	6.5	10.1
2	3.6	3.4	6.4	12	3.6	3.6	6.7	22	3.7	6.6	8.8
3	3.6	3.4	6.8	13	4.2	3.4	6.7	23	3.9	6.7	7.5
4	4.0	3.7	11.1	14	4.2	3.4	11.8	24	4.4	6.8	5.7
5	3.4	3.7	12.6	15	4.2	3.4	19.3	25	4.7	6.8	4.8
6	3.3	3.7	9.8	16	4.4	5.7	9.6	26	4.7	6.8	4.5
7	3.4	3.6	8.3	17	4.0	7.3	9.6	27	4.5	7.3	3.5
8	3.1	3.6	7.6	18	4.5	7.1	10.1	28	3.9	7.1	3.5
9	3.0	3.4	7.0	19	3.9	6.8	10.1	29	3.0	6.9	4.5
10	3.1	4.5	6.6	20	3.6	6.4	10.1	30	3.1	6.9	7.5
								31	3.4	.....	10.5

NOTE.—Daily discharge computed from a rating curve well defined below 55 second-feet. Stream dry on all days for which discharge is not given.

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Monthly discharge of Cottonwood Creek near Dulzura, Calif., for 1906–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906.				
January	59	2.0	15.5	953
February	100	7.0	24.1	1,340
March	5,800	5.0	594	36,500
April	350	93	176	10,500
May	93	20	54.9	3,380
June	55	20	30.5	1,820
July	93	2.0	12.0	738
August	51	.9	6.0	369
September	4.8	.8	1.3	77
The period	.....	.....	.....	55,700
1906–7.				
October	7.1	.9	3.0	184
November	33	7.6	20.4	1,210
December	375	30	80.8	4,970
January	1,170	46	175	10,800
February	116	36	66.9	3,720
March	648	44	191	11,700
April	306	64	111	4,600
May	66	28	44.4	2,730
June	49	9	23.2	1,380
July	8.7	2.2	4.2	258
August	2.5	.1	1.2	74
September	2	.3	1.0	60
The year	1,170	.1	60.2	41,700
1907–8.				
October	16	2.2	7.5	461
November	12	7.0	8.9	530
December	12	7.6	9.8	603
January	96	10	25.2	1,550
February	155	28	58.4	3,360
March	74	15	34.0	2,090
April	31	10	15.6	928
May	20	6.4	9.51	585
June	6.6	.50	3.49	208
July	.70	.02	.145	9
August	.50	.05	.085	5
September	.32	.07	.214	13
The year	155	.02	14.4	10,300
1908–9.				
October	6.3	.32	2.37	146
November	5.0	3.6	4.31	256
December	8.6	4.7	6.22	382
January	620	8.0	104	6,400
February	226	7.0	72.4	4,020
March	510	4.0	101	6,210
April	132	3.0	35.0	2,080
May	6.0	2.0	2.90	178
June	6.0	1.0	1.78	106
July	1.5	.0	.70	43
August	22	.0	2.95	181
September	10	.5	2.10	125
The year	620	.0	27.8	20,100
1909–10.				
October	11	.5	1.55	95
November	34	2.5	9.07	540
December	190	2.5	16.2	996
January	190	4.0	33.1	2,040
February	23.4	2.3	4.68	260
March	69	2.5	9.57	588
April	65	.7	8.74	520
May	2.3	.3	.95	58
June	1.0	.1	.34	20
July	.1	.0	.01	1
The year	190	.0	7.07	5,120
1910–11.				
October	1.2	0.0	0.24	15
November	7.7	1.3	2.78	165
December	3.1	1.7	2.16	133
January	11	2.0	3.09	190
February	35	1.5	4.96	275
March	13	1.1	2.33	143
April	1.5	1.0	1.20	71
May	1.5	.7	.98	60
June	1.7	.0	.49	29
The year	35	.0	1.49	1,080
1911–12.				
November	.0	.0	.00	.0
December	1.5	.1	1.04	64.0
January	4.2	1.5	1.92	118
February	1.5	1.0	1.31	75.4
March	221	1.5	11.8	726
April	113	1.7	15.2	910
May	3.8	.5	1.32	81.2
June	.9	.3	.46	27.4
July	1.5	.0	.19	11.7
The year	221	.0	2.77	2,010
1912–13.				
November	1.3	.0	.91	54
December	1.3	.7	1.52	93
January	2.4	1.0	1.49	92
February	29	1.0	2.98	166
March	6.3	1.2	1.76	108
April	8.5	1.8	2.66	158
May	2.0	.4	1.04	64
June	.6	.0	.34	20
September	.....	.0	1.70	101
The year	29	.0	1.18	856
1913–14.				
November	1.7	.0	.51	30
December	2.0	1.1	1.55	95
January	52	1.1	3.30	203
February	429	1.4	26.4	1,470
March	2.0	1.1	1.34	82
April	1.7	.6	1.04	62
May	1.7	.7	.96	59
June	2.0	.0	.61	36
The year	429	.0	2.81	2,040
1914–15.				
December	1.7	.00	.657	40
January	169	.70	11.9	732
February	448	.43	50.0	3,280
March	115	2.9	26.5	1,630
April	65	4.3	7.78	463
May	257	4.3	58.1	3,570
June	6.6	2.5	3.30	196
July	2.7	1.9	2.28	140
August	3.7	1.6	3.00	184
September	4.4	2.7	3.66	218
The year	448	.00	14.4	10,500
1915.				
October	4.7	3.0	3.79	233
November	7.3	3.4	5.20	309
December	19.3	3.5	8.20	504

NOTE.—No flow in months for which discharge is not given. Records therefore represent full years.

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Combined daily discharge, in second-feet, of Cottonwood Creek and Dulzura conduit near Dulzura, Calif., for 1909–1915.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909.									
1	10	50	93	186	38	14	2.2	.....	10
2	10	40	84	175	40	12	2.6	.....	5
3	10	36	81	167	36	11	1.6	.....	4
4	10	71	77	148	34	12	1.6	.....	3
5	10	44	70	148	34	11	1.4	.....	3
6	10	40	67	134	31	12	1.4	9.0	7
7	10	40	90	120	31	12	1.4	2.5	6
8	10	198	75	101	34	12	1.6	1.0	3
9	10	113	72	91	29	12	1.2	1.0	2.5
10	16	83	67	92	28	12	1.2	1.0	1.5
11	13	80	62	90	30	10	1.0	.....	1.5
12	10	174	58	86	28	12	1.0	.....	1.0
13	24	247	51	82	31	10	1.0	.....	1.0
14	254	169	49	78	31	8.8	1.0	.5	.5
15	83	174	48	73	27	8.8	.5	.5	.5
16	66	118	49	69	27	8.8	.5	5.0	.5
17	51	102	50	64	26	8.8	.5	5.0	.5
18	64	93	48	64	26	7.4	.3	2.0	.5
19	29	79	52	64	26	8.8	.4	10.0	.5
20	24	71	47	64	24	10.0	.....	4.0	.5
21	21	275	47	64	24	8.8	.....	1.5	.5
22	78	171	280	64	24	7.4	.....	1.0	.5
23	464	135	178	56	24	7.4	.....	.5	1.0
24	464	142	162	54	24	4.7	.3	.5	1.5
25	620	118	152	52	24	4.7	.3	.5	1.5
26	637	112	163	48	21	4.7	.3	.....	1.5
27	147	101	522	46	21	3.6	1.5	7.0	1.5
28	157	97	562	45	19	3.6	1.5	20	1.0
29	90	.....	488	57	19	3.1	.5	.5	1.0
30	78	.....	357	43	19	8.1	.....	17	1.0
31	64	.....	327	.....	17	.....	.....	22	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1909–10.										
1	1.0	2.5	8	90	47	31	65	11	0.8	0.1
2	1.0	2.5	12	33	53	30	54	13	.9	.1
3	1.5	2.5	10	61	46	29	49	12	.9	.1
4	2.0	2.5	8	73	42	28	39	12	.9	.....
5	1.5	2.5	20	127	43	26	42	11	.9	.....
6	1.5	2.5	22	99	40	26	42	11	.7	.....
7	1.5	2.5	13	90	40	27	40	9.3	.8	.....
8	1.0	2.5	15	83	41	26	36	8.3	.7	.....
9	.5	6	120	81	40	28	34	6.9	.6	.....
10	.5	6	81	74	39	25	33	6.9	.4	.....
11	11	8	36	77	36	23	33	6.6	.4	.....
12	1.0	10	21	79	35	22	31	5.3	.4	.....
13	.5	9	15	68	34	22	46	5.5	.3	.....
14	.5	12	14	76	34	22	36	5.5	.4	.....
15	.5	18	12	84	37	23	31	6.2	1.0	.....
16	.5	10	10	245	35	24	27	5.8	1.0	.....
17	.5	9	9.1	199	31	28	24	4.2	1.0	.....
18	1.0	8	8.4	95	33	38	23	3.6	.5	.....
19	1.5	8	8.4	90	38	33	20	3.4	.4	.....
20	1.5	7	36	81	75	29	19	6.2	.3	.....
21	1.5	7	242	72	51	26	19	5.5	.1	.....
22	1.5	8	53	68	43	29	16	4.8	.3	.....
23	1.5	8	40	64	40	33	15	3.9	.2	.....
24	1.5	8	40	62	36	28	9.6	2.8	.2	.....
25	1.5	8	34	58	38	32	12	2.3	.2	.....
26	1.5	34	30	56	34	64	11	2.1	.2	.....
27	1.5	30	27	52	34	65	8.8	1.9	.1	.....
28	1.5	16	25	50	31	122	11	1.3	.1	.....
28	1.5	12	24	49	.....	108	10	1.2	.1	.....
30	2.0	10	24	47	.....	90	11	.8	.1	.....
31	2.0	.....	33	44	.....	92	.....	.7	.....	.....

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Combined daily discharge, in second-feet, of Cottonwood Creek and Dulzura conduit near Dulzura, Calif., for 1909–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1910–11.									
1	.....	1.3	2.2	3.4	23	26	9.5	1.0	1.7
2	.....	1.8	2.2	3.4	19	35	22	1.1	1.7
3	.....	3.1	2.1	3.4	36	46	18	1.0	1.7
4	.....	5.0	2.1	2.6	68	78	14	1.1	1.4
5	.....	3.1	2.5	2.6	97	40	11	1.0	1.3
6	.....	2.2	2.5	2.6	41	26	11	1.0	1.2
7	.....	2.2	2.2	2.0	24	26	26	1.0	.7
8	.....	2.2	2.2	2.0	52	30	18	.8	.7
9	.....	2.2	2.2	2.6	47	35	14	.8	.5
10	.....	1.8	2.2	11	45	62	13	.8	.4
11	.....	1.8	2.1	8.6	41	43	11	.8	.2
12	.....	2.2	1.8	3.1	36	40	11	.8	.2
13	.....	3.1	1.8	3.1	21	30	11	.8	.2
14	.....	7.7	2.2	2.8	73	26	9.4	1.5	2
15	.....	4.8	1.8	7.7	54	22	9.4	1.0	.2
16	.....	3.6	1.8	23	46	21	8.0	1.1	.2
17	.....	2.6	2.1	7.1	36	20	8.0	.8	2
18	.....	2.3	2.1	19	31	18	8.0	.8	.2
19	0.1	3.8	2.2	9.3	28	16	8.0	.7	.2
20	.2	2.5	3.1	9.3	27	15	8.0	.7	.2
21	.3	3.3	2.3	6.9	22	15	8.1	1.3	.2
22	.2	2.3	2.3	6.9	15	18	8.0	1.3	.2
23	.5	2.2	2.2	9.3	12	16	6.9	1.3	.2
24	.5	2.2	2.2	15	12	14	6.8	1.0	.2
25	.4	2.2	2.1	6.9	16	14	6.9	.8	.2
26	.5	2.6	2.6	17	14	14	7.3	1.0	.2
27	.5	2.3	2.2	9.3	37	14	7.3	.7	.1
28	.8	2.3	2.5	6.9	31	12	7.3	1.3	.....
29	1.0	2.3	2.1	9.6	.....	12	6.8	1.0	.....
30	1.1	2.5	2.1	16	.....	9.5	6.8	1.0	.....
31	1.2	.....	2.9	14	.....	9.5	.....	1.0	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1911–12.								
1	0.1	2.0	4.9	7.3	41.5	17.8	4.6	0.4
2	.1	1.8	5.1	9.7	32.8	17.5	4.0	.9
3	.1	1.8	4.9	9.3	26.0	17.3	3.4	1.5
4	.1	1.7	5.1	10.0	23.1	15.9	2.8	1.3
5	.6	1.7	4.9	8.7	22.0	15.9	2.2	.4
6	.6	1.7	4.9	18.5	22.7	14.7	2.2	.3
7	.6	1.7	5.5	14.6	19.6	14.9	2.0	.5
8	.6	1.5	5.5	10.5	17.5	29.2	2.0	.5
9	6	1.7	5.5	13.4	19.8	44.7	2.0	.1
10	.9	1.7	4.9	261	23.5	32.1	2.0	.....
11	.9	2.0	4.9	46.6	70.2	24.2	2.0	.....
12	.9	2.0	4.9	27.4	160.5	20.9	1.7	.....
13	.9	1.7	4.2	82.0	116.8	18.3	1.7	.....
14	.9	1.7	4.4	46.7	97.8	16.1	.4	.....
15	.9	22.7	4.4	33.9	90.8	14.5	.4	.....
16	.9	40.7	4.4	23.0	81.4	13.2	.4	.....
17	1.5	43.3	4.2	19.8	70.7	12.6	.4	.....
18	1.5	43.1	4.2	17.6	60.7	11.6	.3	.....
19	1.5	45.6	4.2	16.1	51.9	10.8	.3	.....
20	1.5	41.9	4.1	15.3	45.1	9.9	.4	.....
21	1.5	9.2	3.9	19.6	40.3	9.9	.4	.....
22	1.5	7.1	4.2	21.6	34.5	10.1	.3	.....
23	1.5	6.3	4.2	17.8	30.2	9.4	.9	.....
24	1.5	5.9	4.2	16.5	26.4	9.4	.7	.....
25	1.5	5.7	4.2	14.9	23.7	8.7	.7	.....
26	1.5	5.6	4.1	15.8	23.2	8.7	.5	.....
27	1.5	6.5	4.1	22.4	24.8	8.1	.5	.....
28	1.5	6.2	4.1	19.2	22.7	7.9	.3	.....
29	1.5	5.7	3.8	17.8	20.1	6.5	.5	.....
30	1.5	5.7	.....	60.4	18.9	5.9	.3	.....
31	1.5	5.7	.....	48.0	.....	5.3	.....	.....

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Combined daily discharge, in second-feet, of Cottonwood Creek and Dulzura conduit near Dulzura, Calif., for 1909–1915—Continued.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1912–13.								
1	0.0	1.0	1.3	2.2	24.4	56.8	33.8	0.6
2	.0	1.0	1.3	2.2	17.8	52.3	34.8	.6
3	.0	.9	1.3	2.2	15.5	51.9	16.4	.6
4	.0	.7	1.3	2.2	16.7	48.2	27.6	.6
5	.0	.9	1.3	2.6	15.3	49.0	32.6	.6
6	.0	.9	1.3	3.8	15.9	48.8	32.6	.6
7	.0	1.0	1.3	4.3	18.0	50.0	114	.6
8	.0	.9	1.3	5.1	14.6	49.8	9.2	.5
9	.0	1.0	1.7	4.3	15.2	49.8	7.7	.5
10	.2	1.2	10.2	3.0	15.2	49.8	6.5	.5
11	.3	1.2	7.6	3.0	15.9	49.0	5.4	.5
12	.3	1.3	6.3	3.0	21.0	47.1	4.8	.5
13	.3	1.3	5.4	2.4	18.0	50.1	4.1	.4
14	.4	1.2	4.2	1.7	20.6	50.3	4.1	.4
15	.5	1.2	4.7	1.2	18.6	39.5	4.6	.4
16	.9	1.2	15.6	1.2	15.2	42.8	3.4	.3
17	.9	1.3	12.7	1.2	13.1	46.3	2.8	.3
18	.9	1.3	8.9	1.2	16.6	39.3	1.9	.3
19	.9	1.3	7.1	1.4	15.2	39.2	1.8	.3
20	1.0	1.3	5.7	4.2	14.7	37.4	2.1	.2
21	.9	1.3	5.7	5.1	18.0	37.0	2.4	.2
22	.9	1.3	5.3	61.8	15.9	37.0	.6	.2
23	.9	1.3	4.4	22.6	18.0	37.0	.6	.2
24	.7	1.3	3.9	14.5	20.4	36.8	.4	.2
25	.7	1.3	3.3	25.1	20.9	35.9	.4	.2
26	1.0	1.3	3.3	32.2	18.7	36.8	.4	.0
27	1.2	1.3	3.3	29.8	17.2	36.8	.4	.0
28	1.3	1.3	3.0	36.4	15.8	34.8	1.5	.0
29	1.0	1.3	3.0	.....	22.1	34.8	3.2	.0
30	1.2	1.3	2.5	.....	34.6	34.8	1.8	.0
31	.....	1.3	2.2	.....	52.9	.....	.4	.....
1913–14.								
1	.....	2.0	4.8	13.3	22	13.0	13.6	1.1
2	.....	2.0	4.1	11.9	19.8	10.3	14.3	1.1
3	.....	1.7	2.0	11.2	18.9	8.9	12.1	1.0
4	.....	1.7	1.4	9.5	17.5	8.3	9.4	.7
5	.....	1.8	3.5	8.9	15.6	8.3	8.3	.7
6	.....	1.8	2.9	8.3	14.6	8.9	7.6	.7
7	.....	1.7	2.9	8.3	13.6	8.3	6.3	.7
8	.....	1.7	2.9	7.6	13.3	7.7	6.3	2.0
9	.....	1.6	2.9	7.0	12.1	7.0	5.2	2.0
10	.....	1.6	2.9	6.7	12.1	6.4	5.2	2.0
11	.....	1.6	2.9	6.7	12.1	8.3	5.2	1.4
12	.....	1.7	2.9	6.2	10.6	7.7	5.2	.7
13	.....	1.7	2.9	5.6	10.6	6.3	4.6	.6
14	.....	1.8	2.9	5.6	9.9	5.2	5.2	.5
15	.....	1.8	2.9	5.0	9.2	5.2	5.5	.4
16	.....	1.8	7.0	3.5	9.2	4.6	5.2	.2
17	.....	1.8	7.6	9.3	8.9	3.8	4.6	.2
18	0.7	1.4	6.2	6.8	7.7	3.6	3.6	.2
19	.7	1.1	7.9	48	7.7	3.1	2.5	.2
20	1.6	1.1	7.0	65	7.7	2.4	2.1	.4
21	1.7	3.6	5.9	477	7.7	1.8	1.4	.3
22	1.2	3.2	5.6	240	7.7	7.3	.9	.3
23	1.1	6.4	5.0	76	7.7	14.4	.7	.3
24	1.1	5.6	5.6	48.8	8.3	18.4	.7	.2
25	1.1	5.0	5.6	38.4	8.9	38	.7	.2
26	1.1	5.6	7.7	32.6	9.4	19.5	1.1	.1
27	1.2	5.0	24.1	26.3	11.3	10.2	1.1	.....
28	1.2	4.1	94	24	11.0	8.2	.7	.....
29	1.2	3.0	33.4	.....	11.8	9.2	.7	.....
30	1.5	3.8	19.8	.....	14.3	10.9	1.1	.....
31	.....	4.4	15.8	.....	14.3	.....	1.1	.....

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Combined daily discharge, in second-feet, of Cottonwood Creek and Dulzura conduit near Dulzura, Calif., for 1909–1915—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.										
1	.....	1.7	57	131	33	128	42	15.5	6.1	3.7
2	0.35	1.16	120	160	32	147	43	14.7	6.0	3.7
3	.35	1.63	144	130	32	148	41	14.4	4.5	3.7
4	.35	.7	72	127	30	155	41	14.4	4.0	3.7
5	.35	1.9	52	121	29	310	39	13.8	3.6	3.7
6	.35	2.3	46	111	33	227	38	13.3	3.2	3.7
7	.35	2.8	34	113	32	180	34	12.9	2.0	3.7
8	.35	3.4	31	95	30	166	32	12.9	1.9	3.7
9	.35	3.0	26	84	29	147	30	11.4	1.9	3.7
10	.35	3.5	127	82	26	131	28	11.5	1.8	3.7
11	.35	3.1	462	79	25	120	28	11.5	1.7	3.7
12	1.2	3.1	194	71	24	111	27	10.7	1.6	3.7
13	.7	3.1	136	65	21	98	26	10.0	1.9	3.7
14	.56	3.1	127	62	27	85	26	10.3	3.7	3.7
15	.56	3.4	108	58	38	86	25	9.2	3.7	3.7
16	.56	3.4	84	55	34	75	23	9.4	3.7	3.7
17	1.3	3.1	83	53	27	75	22	9.4	3.7	3.7
18	1.7	2.8	66	50	25	96	21	8.8	3.7	3.7
19	6.6	2.8	61	49	25	82	21	8.6	3.7	3.6
20	6.6	2.0	88	47	23	71	20	7.8	3.7	3.4
21	4.9	2.8	104	45	25	65	19.9	7.4	3.7	3.3
22	3.5	12.6	92	43	52	60	19.9	7.5	3.7	2.8
23	2.8	7.2	71	43	54	61	19.9	7.0	3.7	2.7
24	2.5	7.1	66	40	51	44	19.6	6.5	3.7	3.0
25	1.9	6.6	79	39	48	55	18.6	6.7	3.7	3.6
26	1.16	6.3	70	38	40	54	18.2	6.4	3.7	4.4
27	1.63	5.7	62	43	37	50	17.6	6.1	3.7	4.4
28	2.1	7.9	55	41	34	47	16.7	5.8	3.7	4.2
29	2.0	191	.....	43	46	47	16.0	5.9	3.7	4.0
30	1.9	193	.....	38	116	44	158	6.1	3.7	3.9
31	1.9	87	.....	35	.....	42	.....	6.2	3.7	.....

NOTE.—Both creek and conduit were dry on days for which discharge is not given.

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Combined monthly discharge of Cottonwood Creek and Dulzura conduit for 1909–1915.

Month.	Discharge in second-feet.			Run-off (in acre-feet).
	Maximum.	Minimum.	Mean.	
1909.				
January	637	10	114	7,010
February	275	36	113	6,280
March	562	48	146	8,980
April	186	43	87.5	5,210
May	40	17	27.3	1,680
June	14	3.1	8.98	534
July	2.6	.0	.855	52
August	22	.0	2.95	181
September	10	.5	2.10	125
The period	637	.0	43.0	30,800
1909-10.				
October	11	.5	1.55	95
November	34	2.5	9.07	540
December	242	8	33.9	2,080
January	245	33	81.5	5,010
February	75	31	40.2	2,230
March	122	22	39.6	2,430
April	65	8.8	28.2	1,680
May	13	.7	5.84	359
June	1	.1	.50	30
July	.1	.0	.01	1
The year	245	.0	20.0	14,500
1910-11.				
October	1.2	.0	.24	15
November	7.7	1.3	2.78	165
December	3.1	1.8	2.20	135
January	23	2	7.95	489
February	97	12	35.9	1,990
March	78	9.5	25.9	1,590
April	26	6.8	10.7	637
May	1.5	.7	.98	60
June	1.7	.0	.49	29
The year	97	.0	7.26	5,110
1911-12.				
December	1.5	.1	1.04	64
January	45.6	1.5	10.7	658
February	5.5	3.8	4.55	262
March	261	7.3	31.2	1,920
1911-12.				
April	160.5	17.5	45.3	2,700
May	44.7	5.3	14.9	916
June	4.6	.3	1.34	79.7
July	1.5	.0	.19	11.7
The year	261	.0	9.10	6,610
1912-13.				
November	1.3	.0	.91	54
December	1.3	.7	1.52	93
January	15.6	1.3	4.53	279
February	61.8	1.2	10.0	555
March	52.9	13.1	19.1	1,170
April	56.8	34.8	43.6	2,590
May	34.8	.4	8.38	515
June	.6	.0	.34	20
September	.....	.0	2.83	168
The year	61.8	.0	7.54	5,440
1913-14.				
November	1.7	.0	.51	30
December	6.4	1.1	2.68	165
January	94	1.4	9.77	601
February	477	3.5	43.5	2,420
March	22	7.7	11.8	726
April	38	1.8	9.17	546
May	14.3	.7	4.59	282
June	2.0	.0	.61	36
The year	477	.0	6.63	4,810
1914-15.				
December	6.6	.0	1.60	98
January	193	.7	18.7	1,150
February	462	26	97.0	5,390
March	160	35	70.7	4,350
April	116	21	35.9	2,140
May	310	42	103	6,330
June	43	15.8	26.3	1,560
July	15.5	5.8	9.75	600
August	6.1	1.6	3.45	212
September	4.4	2.7	3.66	218
The year	462	.0	30.5	22,000

NOTE.—No flow in months for which discharge is not given; records therefore represent full years, except the year 1909.

PINE VALLEY CREEK NEAR DULZURA,[1] CALIF.

LOCATION.—Just above junction with Cottonwood Creek, 1 mile above Barrett dam, in NW. ¼ sec. 15, T. 17 S., R. 3 E., about 7 miles northeast of Dulzura, San Diego County.

DRAINAGE AREA.—About 120 square miles, or half the total drainage area of Cottonwood Creek above Barrett dam.

ELEVATION.—About 1,550 feet above sea level.

RECORDS AVAILABLE.—January 1, 1906, to December 31, 1907.

GAGE.—Staff fastened to a small tree a few hundred feet above mouth. Only occasional gage readings were obtained during 1907.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of sand; shifting. Right bank is high and rocky and not subject to overflow; at very high stages water may overtop left bank and flow in two channels.

[1] Described as "near Jamul" in early water-supply papers.

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EXTREMES OF DISCHARGE.—Maximum mean daily discharge 1906–7: 1,500 second-feet, March, 1906. Minimum discharge: Dry in August, 1906, and August 19 and 22 and September 10 to 19, 1907.

DIVERSIONS.—None during the operation of the station, as Dulzura conduit was not completed until January, 1909.

REGULATION.—None.

ACCURACY.—All determinations of discharge considered fair. Daily discharge determined by shifting-control method or by comparison with record of flow of Cottonwood Creek near Dulzura.

Discharge measurements of Pine Valley Creek near Dulzura, Calif., for 1906-1908.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1906.		*Feet.*	*Sec.-ft.*	1907.		*Feet.*	*Sec.-ft.*
Jan. 5	W. V. Hardy	.....	1.8	Mar. 20	W. V. Hardy	4.32	38
19	do	3.10	14.4	Apr. 11	do	4.35	51
19	do	3.20	17.6	27	do	4.20	30
20	do	3.45	41	May 19	do	3.95	17
Feb. 3	do	2.94	4	29	do	3.90	13
15	do	3.12	20	June 11	Clapp and Hardy	3.75	14
Mar. 11	do	3.00	8.2	16	N. L. Hall	3.77	10
Apr. 19	do	4.50	57	Dec. 16	W. V. Hardy	3.33	3.2
May 8	do	4.40	32	1908.			
June 22	C. H. Lee	4.20	7.7	Jan. 16	do	3.40	5.3
Oct. 5	W. F. Martin	4.00	.24	27	do	3.74	20
Nov. 27	W. V. Hardy	4.21	6.7	Feb. 14	do	3.88	24
Dec. 15	do	4.30	14.6	23	do	3.80	20
1907.				Mar. 12	do	.....	13
Jan. 5	do	4.45	27	21	do	.....	10
15	do	4.60	55	Apr. 5	do	.....	7.2
Feb. 7	do	4.30	31	May 12	do	.....	4.1
27	do	4.30	39	Nov. 18	do	.....	.91
Mar. 8	do	4.58	90	Dec. 22	do	.....	2.1

Daily gage height, in feet, of Pine Valley Creek near Dulzura, Calif., for 1906.

Day.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	3.00	3.00	4.90	4.55	4.40	4.12	4.02	3.95	3.94	4.10	4.15
2	.....	2.95	3.00	4.90	4.55	4.35	4.12	4.01	3.95	4.03	4.05	4.20
3	.....	2.95	2.98	4.75	4.50	4.35	4.11	4.01	3.95	4.10	4.05	4.20
4	.....	2.95	3.00	4.75	4.50	4.30	4.12	4.00	3.95	3.98	4.00	4.20
5	.....	2.96	3.04	4.80	4.55	4.30	4.13	3.95	3.94	3.80	4.10	4.20
6	.....	3.24	2.98	4.75	4.50	4.30	4.10	3.93	3.94	3.55	4.10	4.25
7	.....	3.15	2.92	4.80	4.50	4.30	4.20	3.80	4.00	3.60	4.10	4.25
8	.....	3.07	2.93	4.70	4.40	4.30	4.20	3.79	4.00	3.70	4.10	4.25
9	.....	3.09	2.92	4.65	4.40	4.30	4.22	3.76	3.98	3.75	4.10	4.25
10	.....	3.01	2.95	4.65	4.40	4.30	4.20	3.65	3.98	3.80	4.10	4.20
11	.....	3.11	2.97	4.60	4.35	4.25	4.17	3.60	4.00	4.00	4.05	4.25
12	.....	3.01	4.35	4.55	4.40	4.20	4.15	3.55	4.00	4.00	4.10	4.30
13	.....	3.01	5.00	4.60	4.40	4.20	4.12	3.48	4.09	4.05	4.10	4.45
14	.....	3.09	4.03	4.55	4.40	4.20	4.12	3.40	4.08	4.05	4.05	4.45
15	.....	4.02	3.70	4.55	4.40	4.20	4.10	3.37	4.12	3.95	4.10	4.30
16	.....	3.60	4.04	4.50	4.40	4.20	4.11	3.00	4.02	3.95	4.10	4.30
17	.....	3.40	3.95	4.50	4.35	4.20	4.10	2.70	4.05	4.00	4.10	4.20
18	3.00	3.30	3.60	4.50	4.35	4.20	4.10	4.40	3.96	4.00	4.10	4.20
19	3.20	3.28	3.50	4.50	4.30	4.15	4.11	4.40	4.05	4.10	4.05	4.30
20	3.45	3.20	3.38	4.50	4.30	4.15	4.10	4.20	4.03	4.05	4.05	4.20
21	3.25	3.21	3.31	4.45	4.30	4.10	4.07	4.20	3.98	4.10	4.10	4.20
22	3.20	3.22	3.35	4.45	4.40	4.20	4.05	4.20	4.02	4.10	4.10	4.15
23	3.18	3.19	3.30	4.50	4.40	4.15	4.06	4.20	3.91	4.05	4.20	4.20
24	3.10	3.08	.....	4.50	4.40	4.15	4.06	4.19	4.01	4.10	4.20	4.20
25	3.08	3.01	.....	4.50	4.40	4.15	4.05	4.18	4.03	4.05	4.20	4.20
26	3.05	2.96	.....	4.50	4.50	4.15	4.05	4.18	4.00	4.00	4.20	4.20
27	3.03	2.94	.....	4.50	4.45	4.15	4.05	4.18	4.04	4.10	4.20	4.30
28	3.03	2.97	5.20	4.65	4.50	4.20	4.04	4.16	3.98	4.10	4.20	4.70
29	3.03	.....	4.82	4.75	4.50	4.15	4.03	4.10	3.92	4.10	4.10	4.60
30	3.03	.....	4.80	4.65	4.40	4.15	4.02	4.00	4.00	4.00	4.15	4.50
31	3.03	.....	5.00	.....	4.40	.....	4.02	4.00	.....	4.10	.....	4.50

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Daily discharge, in second-feet, of Pine Valley Creek near Dulzura, Calif., for 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	29	38	39	60	27	11	3	1.2	0.6	1.2	3.0	2.8
2	29	38	37	56	27	11	3	1.3	.3	1.2	3.0	2.8
3	19	38	39	71	27	12	3	1.2	.5	1.2	3.0	2.8
4	30	34	42	71	27	12	3	.9	.3	1.6	3.0	2.8
5	27	34	83	57	30	13	3	.9	.6	1.7	3.0	2.8
6	39	31	108	58	30	13	2	.6	.4	2.2	3.0	3.0
7	37	31	100	54	27	14	2	.5	.4	2.5	2.9	3.0
8	38	31	90	54	27	14	2	.5	.3	2.1	2.8	3.6
9	40	32	90	55	24	15	2	.2	.2	2.5	2.8	3.5
10	54	29	83	55	24	16	2	.6	.0	2.1	3.0	3.4
11	56	26	76	51	22	14	2	.6	.0	2.0	3.0	3.6
12	53	26	72	46	22	13	2	.3	.0	1.8	2.8	3.5
13	55	27	68	46	22	13	2	.8	.0	1.8	2.8	3.4
14	57	27	56	45	22	10	3	.8	.0	2.8	2.8	3.3
15	55	28	55	45	19	10	2	.1	.0	3.5	2.9	3.3
16	55	31	47	48	19	10	2	.8	.0	5.0	2.9	3.2
17	60	43	50	43	19	8	2	.1	.0	6.0	3.5	3.2
18	124	40	48	43	17	8	2	.1	.0	7.0	3.5	3.1
19	75	40	38	38	17	8	2	.0	.0	6.0	3.4	3.2
20	68	37	36	38	17	8	1	.8	.4	4.0	3.3	3.3
21	61	37	63	37	14	8	1	1.2	.6	2.8	3.2	3.3
22	54	37	45	37	14	8	1	.0	.6	3.3	3.0	3.4
23	46	45	48	32	14	8	1	.6	.6	3.7	3.0	3.4
24	46	42	45	32	14	8	1	.5	.6	4.0	3.2	3.4
25	46	39	43	31	14	7	1	.5	.6	3.0	3.0	3.4
26	46	33	119	31	13	7	2	.4	.5	2.8	2.8	3.4
27	46	39	79	30	13	6	2	4	.4	2.8	2.8	3.8
28	46	41	69	30	13	6	2	.6	.3	4.0	2.8	3.9
29	46	.....	58	30	13	5	2	.5	.6	3.0	2.8	4.0
30	46	.....	53	27	13	3	2	.5	.8	4.0	2.8	4.0
31	46	.....	54	.....	12	.....	2	.5	.....	3.1	.....	5.1

NOTE.—Discharge January to June, computed by shifting-control method; July to December interpolated by comparison with record of flow of Cottonwood Creek near Dulzura.

Monthly discharge of Pine Valley Creek near Dulzura, Calif., for 1906–7.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1906.					**1906–7.**				
January	41	1	10.4	640	January	124	19	49.3	3,030
February	75	5	19.4	1,080	February	45	26	34.8	1,930
March	1,500	3	156	9,590	March	119	36	62.4	3,840
April	150	44	89.6	5,330	April	71	27	45.0	2,680
May	71	15	39.4	2,420	May	30	12	19.8	1,220
June	32	1.8	9.8	583	June	16	3	10.0	595
July	8.2	.6	2.6	160	July	3	1	2.0	123
August	32	.0	4.0	246	August	1.3	0	.6	37
September	2.7	.2	.6	36	September	8	0	.3	18
The period	.....	.....	.....	20,100	The year	.....	.....	20.6	14,900
1906–7.					**1907.**				
October	1.8	.0	.8	49	October	7	1.2	3.1	191
November	6.5	.3	2.6	155	November	3.5	2.8	3.0	179
December	114	4.2	20.1	1,240	December	5.1	2.8	3.4	209

NOTE.—Discharge January, 1906, to June, 1907, determined by the shifting-control method. For the rest of 1907 discharge was estimated by comparison with record of flow of Cottonwood Creek.

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DULZURA CONDUIT NEAR DULZURA,[1] CALIF.

LOCATION.—About 12 miles below intake and 2 miles southeast of Dulzura, San Diego County. During 1909 and 1910 station was 1½ miles below intake.

RECORDS AVAILABLE.—January 1, 1909, to September 30, 1915.

GAGE.—Lietz water-stage recorder at weir.

DISCHARGE.—Computed from gage-height record at an 8-foot rectangular steel plate weir about 1¼ miles above lower end of conduit.

ACCURACY.—Record considered good. Water-stage recorder is checked twice each day by patrolman. The seepage loss between intake and measuring weir is estimated at about 3 per cent.

COOPERATION.—Record for 1911 furnished by Southern California Mountain Water Co., through M. M. O'Shaughnessy, chief engineer. Records for 1912–15, furnished by City of San Diego, through the Department of Water. Records are furnished in million gallons per day. Determinations of daily discharge converted into second-feet and monthly discharge computed by the U. S. Geological Survey. Later records are withheld by City of San Diego on account of pending litigation.

Dulzura conduit (Pl. XVIII, *C*) diverts water from Cottonwood and Pine Valley creeks about half a mile above their junction. The conduit is 13.38 miles long and is concrete lined except in 4,490 feet of flume and 9,219 feet of tunnel. The average width is about 5 feet and the depth 4 feet 2 inches. The grade is 4 feet in 5,000 and the capacity 40 million gallons per day (62 second-feet). The water, which is stored at Morena reservoir, flows down the natural channel of Cottonwood Creek about 6½ miles to the intake of the conduit. The flow of Pine Valley and Lyons Valley creeks is also diverted into the conduit. From the conduit the water flows down the natural channel of Dulzura Creek into Lower Otay reservoir, where it is diverted for municipal use at San Diego.

Discharge measurements of Dulzura conduit near Dulzura, Calif., for 1909–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1909.		*Feet.*	*Sec.-ft.*	1909.		*Feet.*	*Sec.-ft.*
Feb. 24	W. V. Hardy	3.40	52.0	Jan. 25	W. V. Hardy	0.94	6.1
24	do	3.40	51.0	25	do	1.26	12.0
Apr. 21	Clapp and Hardy	3.70	54.2	25	do	1.56	18.0
May 27	W. V. Hardy	1.65	16.2	25	do	2.23	26.0
				25	do	2.75	38.0
1910.				25	do	3.28	48.0
Jan. 25	do	.45	.9	25	do	3.50	53.0
25	do	.49	1.1	Mar. 13	do	1.85	19.0
25	do	.62	2.3	June 5	do	.37	.8

[1] Described as near "Jamul" in early water-supply papers.

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Daily discharge, in second-feet, of Dulzura conduit near Dulzura, Calif., for 1909–1915.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1909.							
1	2.1	23.2	50	54	32.1	11.8	0.7
2	2.1	23.2	48	54	36	10.3	1.1
3	2.1	28.4	42	56	32.1	8.8	.6
4	2.1	42.0	55	56	30.2	10.3	.6
5	2.1	37.0	50	56	30.2	8.8	.4
6	2.1	32.1	50	56	28.4	10.3	.4
7	2.1	32.1	51	58	28.4	10.3	.4
8	2.1	38	50	52	30.2	10.3	.3
9	2.1	44	50	52	26.6	10.3	.2
10	4.5	44	47	56	24.9	10.3	.2
11	3.2	44	52	56	26.6	8.8	.....
12	2.1	42	50	56	24.9	10.3	.....
13	7.3	39	45	56	28.4	8.8	.....
14	46.0	37	45	56	28.4	7.3	.....
15	26.6	42	44	56	24.9	7.3	.....
16	21.5	40	44	56	24.9	7.3	.....
17	16.6	40	44	54	23.2	7.3	.....
18	11.8	42	44	56	23.2	5.9	.....
19	8.8	49	48	56	23.2	7.3	.....
20	7.3	49	43	56	21.5	8.8	.....
21	5.9	49	.....	56	21.5	7.3	.....
22	.....	39	.....	56	21.5	5.9	.....
23	.....	43	18.2	50	21.5	5.9	.....
24	.....	50	52	48	21.5	3.2	.....
25	.....	49	52	48	21.5	3.2	.....
26	16.6	50	53	44	18.2	3.2	.....
27	15.0	50	49	42	18.2	2.1	.....
28	24.9	50	52	42	16.6	2.1	.....
29	21.5	.....	51	48	16.6	2.1	.....
30	26.6	.....	54	34	16.6	2.1	.....
31	28.4	.....	54	.....	15.0	.....	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1909–10.							
1	.....	20.6	42	26.6	.....	10.3	0.4
2	.....	.....	49	25.7	.....	11.8	.5
3	.....	16.6	42	24.9	.....	11.8	.5
4	.....	50	37	24.0	11.8	11.0	.5
5	.....	49	39	23.2	35	9.5	.5
6	7.3	54	36	23.2	38	8.8	.4
7	6.6	58	36	23.2	36	7.0	.4
8	8.8	56	37	23.2	32.1	6.2	.4
9	27.5	56	37	24.9	30.2	5.9	.3
10	51	56	36	21.5	30.2	5.9	.2
11	30.2	55	33	19.8	30.2	5.6	.2
12	16.6	56	32.1	19.8	26.6	4.5	.2
13	12.6	53	31.1	19.8	42	4.5	.1
14	11.0	51	31.1	19.0	33	4.5	.2
15	9.6	52	34	20.6	28.4	5.2	.....
16	8.0	55	32.1	21.5	24.9	4.8	.....
17	6.6	54	28.4	24.9	21.5	3.2	.....
18	5.9	52	30.2	34	20.6	2.6	.....
19	5.9	56	34	30.2	18.2	2.6	.....
20	24.0	55	52	26.6	17.4	5.2	.....
21	52	56	38	23.2	17.4	4.5	.....
22	35	56	38	26.6	15.0	3.8	.....
23	32.1	56	36	30.2	14.2	3.2	.....
24	30.2	56	32.1	24.9	2.6	2.1	.....
25	28.4	50	34	28.4	11.0	1.6	.....
26	24.0	50	30.2	55	9.5	1.6	.....
27	23.2	47	30.2	50	8.0	1.4	.....
28	20.6	45	27.5	53	9.5	.9	.....
29	20.6	45	.....	54	9.5	.7	.....
30	20.6	43	.....	54	10.3	.4	.....
31	29.3	40	.....	55	.....	.4	.....

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Daily discharge, in second-feet, of Dulzura conduit near Dulzura, Calif., for 1909–1915—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.
1910–11.						1910–11.					
1	.....	.....	19.2	24.0	8.4	16	.....	20.0	42.5	19.2	7.0
2	.....	.....	16.3	32.7	20.0	17	.....	4.6	32.7	18.6	7.0
3	.....	.....	32.7	42.5	16.3	18	.....	16.3	28.2	17.0	7.0
4	.....	.....	65.1	65.1	13.0	19	.....	7.0	26.0	14.5	7.0
5	.....	.....	62.1	32.7	9.8	20	.....	7.0	24.0	14.2	7.0
6	.....	.....	37.4	24.0	9.8	21	.....	4.6	20.0	13.5	7.0
7	.....	.....	20.0	24.0	24.0	22	.....	4.6	13.0	16.3	7.0
8	.....	.....	47.9	28.2	16.3	23	.....	7.0	9.8	14.5	5.8
9	.....	.....	42.5	32.7	13.0	24	.....	13.0	9.8	13.2	5.8
10	.....	.....	40.5	59.2	11.4	25	.....	4.6	14.2	13.2	5.8
11	.....	.....	37.4	37.4	9.8	26	.....	14.4	13.0	13.0	5.8
12	.....	.....	32.7	37.4	9.8	27	0.4	7.0	35.1	12.4	5.8
13	.....	.....	18.1	28.2	9.8	28	.4	4.6	28.2	11.0	5.8
14	.....	.....	50.7	24.0	8.4	29	.4	7.0	.....	10.5	5.8
15	.....	4.6	47.9	20.7	8.4	30	.4	13.0	.....	8.4	5.8
						31	.4	9.9	.....	8.4	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1911–12.							1911–12.						
1	.....	3.6	5.3	38.5	16.1	4.2	16	38.5	2.9	20.0	41.4	11.9	.....
2	.....	3.6	8.2	30.8	15.8	3.6	17	40.9	2.9	17.8	45.7	11.3	.....
3	.....	3.6	7.8	24.0	15.8	2.9	18	40.1	2.9	15.8	44.7	10.7	.....
4	.....	3.6	8.5	21.1	14.4	2.4	19	41.4	2.9	14.4	41.8	9.9	.....
5	.....	3.6	7.2	20.0	14.4	1.8	20	38.9	2.9	13.5	40.9	9.2	.....
6	.....	3.6	16.1	20.7	13.2	1.8	21	7.2	2.6	17.8	37.3	9.2	.....
7	.....	4.2	12.9	17.8	13.2	1.5	22	5.3	2.9	22.4	31.8	9.2	.....
8	.....	4.2	8.8	15.8	26.8	1.5	23	4.8	2.9	16.1	27.7	8.5	.....
9	.....	4.2	10.7	17.8	40.9	1.5	24	4.2	2.9	14.8	24.4	8.5	.....
10	.....	3.6	39.7	21.5	29.7	1.5	25	4.2	2.9	13.2	22.0	7.8	.....
11	.....	3.6	35.0	37.3	22.4	1.5	26	3.9	2.9	13.8	21.5	7.8	.....
12	.....	3.6	22.4	47.5	19.2	1.2	27	4.8	2.9	20.4	22.8	7.2	.....
13	.....	2.9	42.8	43.8	16.8	1.2	28	4.5	2.9	17.2	20.7	7.2	.....
14	.....	2.9	38.1	43.8	14.8	.....	29	4.2	2.8	15.8	18.1	5.9	.....
15	20.7	2.9	29.7	42.8	13.2	.....	30	4.2	.....	33.9	17.2	5.3	.....
							31	4.2	.....	42.8	.....	4.8	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	Sept.	Day.	Jan.	Feb.	Mar.	Apr.	May.	Sept.
1912–13.							1912–13.						
1	.....	1.2	21.5	48.3	31.8	.....	16	13.2	.....	13.8	40.1	2.4	.....
2	.....	1.2	15.8	45.7	32.8	.....	17	10.3	.....	11.9	43.8	1.8	.....
3	.....	1.2	13.8	47.6	14.4	.....	18	7.2	.....	15.2	36.8	.9	.....
4	.....	1.2	15.2	45.7	25.8	.....	19	5.6	.....	13.8	36.8	.9	.....
5	.....	1.2	13.8	46.6	30.8	.....	20	4.2	2.4	13.2	35.0	1.4	.....
6	.....	2.4	14.4	46.6	30.8	.....	21	4.2	2.9	16.5	35.0	1.8	.....
7	.....	2.9	16.5	47.6	9.9	.....	22	3.6	32.8	14.4	35.0	.....	.....
8	.....	3.6	13.2	47.6	7.8	.....	23	2.9	19.2	16.5	35.0	.....	.....
9	.....	2.9	13.8	47.6	6.5	.....	24	2.4	12.5	17.2	35.0	.....	.....
10	8.5	1.8	13.8	47.6	5.3	.....	25	1.8	15.1	19.2	34.1	.....	.....
11	5.9	1.8	14.4	46.6	4.2	.....	26	1.8	29.7	17.2	35.0	.....	.....
12	4.8	1.8	19.2	44.7	3.6	.....	27	1.8	23.2	15.8	35.0	.....	.....
13	3.9	1.2	16.5	47.6	2.9	28.6	28	1.8	33.9	14.4	32.8	.9	.....
14	2.9	.5	19.2	47.6	2.9	4.8	29	1.8	.....	20.7	32.8	2.8	.....
15	2.9	.....	17.2	36.8	3.6	.5	30	1.5	.....	32.8	32.8	1.4	.....
							31	1.2	.....	46.6	.....	.....	.....

NOTE.—No flow from Oct. 1, 1911, to Jan. 14, 1912; and from June 14 to Sept. 30, 1912.

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Daily discharge, in second-feet, of Dulzura conduit near Dulzura, Calif., for 1909–1915—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1913–14.							1913–14.						
1	.....	3.6	11.3	20	11.9	11.9	16	.....	5.3	2.1	7.8	3.6	4.2
2	.....	2.9	9.9	17.8	9.2	12.6	17	.....	5.9	7.8	7.8	2.8	3.6
3	.....	.....	9.2	17.2	7.8	10.7	18	.....	4.2	5.3	6.6	2.8	2.8
4	.....	.....	7.8	15.8	7.2	8.2	19	.....	5.9	35	6.6	2.4	1.8
5	.....	2.4	7.2	14.1	7.2	7.2	20	.....	5.3	46	6.6	1.8	1.4
6	.....	1.8	6.6	13.2	7.8	6.6	21	2.4	4.2	48	6.6	1.2	.7
7	.....	1.8	6.6	12.2	7.2	5.3	22	1.8	4.2	38	6.6	6.6	.2
8	.....	1.8	5.9	11.9	6.6	5.3	23	4.8	3.6	46	6.6	13.2	.....
9	.....	1.8	5.3	10.7	5.9	4.2	24	4.2	4.2	42	7.2	17.2	.....
10	.....	1.8	5.3	10.7	5.3	4.2	25	3.6	4.2	35	7.8	36.9	.....
11	.....	1.8	5.3	10.7	7.2	4.2	26	4.2	5.3	30	7.8	18.4	.4
12	.....	1.8	4.8	9.2	6.6	4.2	27	3.6	17.8	24	9.9	9.2	.4
13	.....	1.8	4.2	9.2	5.3	3.6	28	2.9	42	22	9.9	7.2	.....
14	.....	1.8	4.2	8.5	4.2	4.2	29	1.8	30	.....	10.7	7.8	.....
15	.....	1.8	3.6	7.8	4.2	4.5	30	2.6	17.8	.....	13.2	9.2	.....
							31	3.2	13.8	.....	13.2	.....	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1914–15.									
1	.....	1.0	45	49	28	52	37	12.9	3.6
2	.....	.46	46	45	27	52	36	12.2	3.6
3	.....	.93	44	48	27	52	36	11.9	2.3
4	.....	.00	43	49	26	51	37	11.9	1.7
5	.....	1.2	43	46	25	53	35	11.3	1.4
6	.....	1.6	42	46	28	51	34	11.0	1.2
7	.....	2.1	32	51	27	50	31	10.7	.....
8	.....	2.7	30	49	25	48	29	10.7	.....
9	.....	2.3	26	51	24	45	27	9.2	.....
10	.....	2.8	46	51	22	36	25	9.2	.....
11	.....	2.4	13.8	49	21	40	25	9.2	.....
12	.....	2.4	4.2	51	20	44	24	8.5	.....
13	.....	2.4	24	51	14.4	34	23	7.8	.....
14	.....	2.4	44	51	17.1	43	23	8.2	.....
15	.....	2.7	43	49	32	51	22	7.1	.....
16	.....	2.7	42	47	28	47	20	7.2	.....
17	.....	2.4	40	46	22	50	19.2	7.3	.....
18	.....	2.1	46	45	20	51	18.4	6.7	.....
19	5.3	2.1	43	44	20	49	17.8	6.5	.....
20	5.3	1.3	45	42	18.8	49	17.1	5.9	.....
21	4.2	2.1	44	40	20	50	17.1	5.5	.....
22	2.8	11.3	24	39	41	49	17.1	5.5	.....
23	2.1	6.5	27	40	45	34	17.1	5.0	.....
24	1.8	6.4	44	37	41	22	16.8	4.5	.....
25	1.2	5.9	47	36	43	48	15.8	4.2	.....
26	.46	5.6	47	35	35	48	15.4	3.9	.....
27	.93	5.0	48	40	32	45	14.8	3.6	.....
28	1.4	6.9	45	38	29	42	14.1	3.4	.....
29	1.3	22	.....	40	39	42	13.5	3.4	.....
30	1.2	52	.....	34	51	40	13.2	3.4	.....
31	1.2	48	.....	30	.....	38	.....	3.5	.....

NOTE.—Daily discharge 1909–10 determined from a rating curve well defined between 0.7 and 54 second-feet. Probably a small amount of water in conduit during May, 1911. Conduit dry on all days for which discharge is not given.

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Monthly discharge of Dulzura conduit near Dulzura, Calif., for 1909–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1908–9.				
January	46	0.0	10.1	6,210
February	50	23.2	41	22,800
March	55	.0	44.7	27,500
April	58	34	52.5	31,200
May	36	15	24.4	15,000
June	11.8	2.1	7.3	4,340
July	1.1	.0	.16	98
The period				107,000
1909–10.				
December	52	.0	17.7	10,900
January	58	.0	48.4	2,980
February	52	27.5	35.5	1,970
March	55	19	30.0	1,840
April	42	.0	19.4	1,150
May	11.8	.4	4.89	301
June	.5	.0	.32	10
The year	58	.0	12.9	19,200
1910–11.				
December	.4	.0	.06	4
January	20.0	.0	4.81	296
February	65.1	9.8	31.0	1,720
March	65.1	8.4	23.6	1,450
April	24.0	5.8	9.45	562
The year	65.1	.0	5.57	4,030
1911–12.				
January	41.4	.0	8.77	539
February	4.2	2.6	3.24	186
March	42.8	5.3	19.4	1,190
April	47.5	15.8	30.0	1,790
1911–12.				
May	40.9	4.8	13.6	836
June	4.2	.0	.89	53.0
The year	47.5	.0	6.33	4,590
1912–13.				
January	13.2	.0	3.04	187
February	33.9	.0	7.02	390
March	46.6	11.9	17.3	1,060
April	48.3	32.8	41.0	2,440
May	32.8	.0	7.34	451
September	28.6	.0	1.13	67
The year	48.3	.0	6.35	4,600
1913–14.				
December	4.8	.0	1.13	69
January	42	.0	6.47	398
February	48	2.1	17.1	950
March	20	6.6	10.4	640
April	36.9	1.2	8.13	484
May	12.6	.0	3.63	223
The year	48	.0	3.82	2,760
1914–15.				
December	5.3	.0	.942	58
January	52	.0	6.76	416
February	48	4.2	38.1	2,120
March	51	30	44.2	2,720
April	51	14.4	28.3	1,680
May	53	22	45.4	2,790
June	37	13.2	23.0	1,370
July	12.9	3.4	7.46	459
August	3.6	.0	.45	28
The year	53	.0	16.1	11,600

NOTE—No flow in months for which records are not given. Records therefore represent complete years.

MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the Tia Juana River basin at points other than those at which gaging stations are maintained are listed in the following table:

Miscellaneous discharge measurements in Tia Juana River drainage basin.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
Jan. 19, 1915	Tia Juana River	2½ miles above Tia Juana, Mexico		0.8
Apr. 6, 1915	do	Tia Juana, Mexico		44
Apr. 10, 1915	do	do		36
Apr. 6, 1915	do	Mouth		37
Apr. 10, 1915	do	do		26
Dec. 19, 1913	Cottonwood Creek	Highway crossing near Campo		1.5
Apr. 5, 1915	do	Marron Valley	0.30	12
Oct. 1, 1915	do	Near Campo	.18	.8
Oct. 8, 1915	do	do	.09	.6
Jan. 27, 1916	do	Morena reservoir		[a] 15,356
Mar. 10, 1918	do	SW.¼ sec. 23, T. 18 S., R. 2 E., near Cottonwood.		5.1

[a] Computed from data collected at reservoir by Geo. Cromwell, city engineer, San Diego.

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SWEETWATER RIVER BASIN.

GENERAL FEATURES.

Sweetwater River rises in the south and east slope of the Cuyamaca Mountains of the Coast Range, flows nearly due south for a distance of 15 miles, then turns to the west and southwest and discharges into San Diego Bay south of National City. Its length is 45 miles and its drainage area comprises about 215 square miles, the greater part of which is in mountainous country. The basin is extremely narrow. It lies directly south of San Diego River and north of the Otay and Cottonwood Creek basins.

The topography is not so rough as that of San Diego River basin, although the mountains and foothills extend within 3 or 4 miles of the shore line of San Diego Bay, and the valley and mesa lands are not so extensive as along San Diego River. The basin is poorly forested. The timber is confined almost entirely to the immediate valleys of the streams and to the higher mountain regions. The mountain slopes are fairly well covered with brush, but the lower foothills are almost bare, supporting only a sparse growth of low brush.

The mean annual rainfall ranges from 10 to 15 inches along the foothill belt and from 20 to 45 inches in the mountains.

A considerable area lying between San Diego Bay and the foothills south from National City to the Mexican boundary is under a high state of cultivation. The greater part of this land is irrigated by water taken from Sweetwater River.

The celebrated Sweetwater dam is on Sweetwater River about 8 miles above its mouth at an elevation of 145 feet. (See Pl. VII, A.) There are two other reservoir sites on Sweetwater River, one a short distance above the Dehesa post office and another 1 mile below Descanso, at an elevation of 3,340 feet above sea level.

During the extremely dry period from 1898 to 1904 there were years when no water from Sweetwater River reached the reservoir. From 1899 to 1904 the reservoir was dry, and to tide over this period of drought pumping was resorted to. Wells were sunk in the reservoir site, and pumps installed, by means of which water was delivered to the distribution system. Pumping was also extensively carried on in the valley along the river below the reservoir. It is probable that the construction of additional storage reservoirs on the upper reaches of the river would serve to tide over an extended dry period.

GAGING-STATION RECORDS.

SWEETWATER RIVER NEAR DESCANSO, CALIF.

LOCATION.—In SE. ¼ sec. 25, T. 15 S., R. 3 E., at Ellis ranch, 2 miles below mouth of Guatay Creek, and 1½ miles below Descanso, San Diego County.

DRAINAGE AREA.—43.7 square miles (measured on topographic maps).

ATION.—About 3,300 feet above sea level.

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A. SWEETWATER DAM, SEPTEMBER 17, 1918.

B. LAKE HODGES DAM, SAN DIEGNITO RIVER.

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A.

B.

MURRAY DAM, MARCH 9, 1918.

***A*, Upstream side; *B*, downstream side.**

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RECORDS AVAILABLE.—November 21, 1905, to September 30, 1918.

GAGE.—Staff in three sections on left bank a short distance below intake of Ellis ditch. Gages previously used have been at about same site, but original datum has not been maintained.

DISCHARGE MEASUREMENTS.—Made from cable just below gage or by wading.

CHANNEL AND CONTROL.—Sand and fine gravel; shifting. Banks high and not likely to be overflowed. October 11, 1914, a concrete control was constructed across channel opposite gage. (See Pl. VI, *B*.) It was wrecked by the flood on January 27, 1916, and has not been rebuilt. A section of this control and a few large boulders serve as incomplete control.

EXTREMES OF DISCHARGE.—1905–1918: Maximum stage January 27, 1916, not known (discharge, 9,870 second-feet); no flow during parts of 1910, 1911, 1913, 1914, and 1916.

DIVERSIONS.—About 0.3 second-foot is diverted above gage for irrigation on Ellis ranch.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves usually applicable only for short periods. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, by shifting-control method or, by interpolating between dis charge measurements. Records fair.

Discharge measurements of Sweetwater River near Descanso, Calif., for 1905–1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1905.			
Sept. 11	D. W. Murphy	.....	[a] 0.4
Nov. 21	C. H. Lee	3.54	1.1
Dec. 10	....do	3,62	2.5
1906.			
Jan. 6	W. V. Hardy	3.62	2.7
23	.....do	3.79	9.3
Feb. 4	.....do	3.68	4.8
15	.....do	4.60	115
16	.....do	4.50	96
16	.....do	4.40	75
16	.....do	4.30	62
16	.....do	4.20	51
16	.....do	4.10	46
17	.....do	4.00	32
19	.....do	3.90	20
Mar. 10	.....do	3.88	10.7
Apr. 5	.....do	4.85	81
6	.....do	4.65	74
18	.....do	4.27	37
20	.....do	4.20	35
May 8	.....do	4.05	24
June 19	C. H. Lee	3.60	4.3
Aug. 7	R. S. Hawley	3.16	1.1
Oct. 9	W. F. Martin	3.15	1.1
Nov. 28	W. V. Hardy	3.20	4.4
Dec. 13	.....do	3.48	12.7
1907.			
Jan. 4	W. V. Hardy	3.58	9.60
12	.....do	4.00	49
13	.....do	4.10	49
Feb. 6	.....do	4.00	26
9	.....do	3.90	22
25	.....do	4.12	27
28	.....do	4.08	25
Mar. 7	.....do	4.80	95
19	.....do	4.20	43
1907.			
Apr. 9	W. V. Hardy	4.30	49
25	.....do	4.10	26
May 18	.....do	3.82	18
30	.....do	3.68	15
June 14	.....do	3.52	11
23	.....do	3.30	2.5
July 23	W. A. Lamb	3.30	2.5
Dec. 15	W. V. Hardy	3.29	4.7
31	.....do	3.27	3.3
1908.			
Jan. 15	W. V. Hardy	3.41	5.9
26	.....do	3.50	10
27	.....do	3.41	7.9
28	.....do	3.60	13
Feb. 11	.....do	3.50	12
11	.....do	3.52	12
11	.....do	3.60	17
12	.....do	3.82	36
22	.....do	3.49	9.8
24	.....do	3.50	12
Mar. 3	.....do	3.52	9.4
4	.....do	3.73	18
11	.....do	3.50	9.1
20	.....do	3.42	4.2
22	.....do	3.43	4.3
Apr. 3	.....do	3.44	4.7
13	.....	3.44	3.7
28	.....	3.33	4.0
May 7	.....	3.32	4.9
13	.....do	3.32	5.0
27	.....do	3.16	1.8
June 13	.....do	3.10	1.1
July 7	.....do	2.98	.36
Nov. 16	.....do	3.11	.78
Dec. 8	.....do	3.21	1.5
19	.....do	3.21	1.4

[a] Weir measurement.

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Discharge measurements for Sweetwater River near Descanso, Calif., for 1905-1918—Continued.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1909.			
Jan. 26	W. V. Hardy	3.9	15.1
Feb. 21	do	4.8	12.4
22	do	4.4	76
22	do	4.6	81
Mar. 10	do	4.08	27
24	do	4.2	39
Apr. 7	do	4.3	49
20	Hardy and Clapp	4.1	28
20	do	4.1	28
May 26	W. V. Hardy	3.75	9.8
28	R. E. Haines	3.64	7.8
1910.			
Jan. 23	W. V. Hardy	4.20	32
27	do	4.10	22
Feb. 14	do	3.95	12
17	do	3.93	13
Mar. 3	do	3.94	9.2
4	do	3.62	8.8
12	do	3.88	6.7
14	do	3.86	7.6
Apr. 2	do	4.02	17
3	do	4.12	20
26	do	4.10	6.7
May 7	do	4.08	5.7
24	do	3.98	4.6
26	do	3.92	3.4
June 4	do	3.84	2.4
25	do	3.68	1.2
Sept. 18	C. C. Jacob	3.59	.34
Nov. 16	W. V. Hardy	3.55	1.3
1911.			
Feb. 9	W. V. Hardy	3.70	6.1
Mar. 8	do	4.12	24
Apr. 17	do	3.85	4.6
May 8	do	3.77	2.3
Nov. 9	F. C. Ebert	3.58	a .7
1912.			
Jan. 16	F. C. Ebert	3.62	.6
Mar. 4	do	3.82	3.2
5	do	3.73	1.9
28	do	4.12	14
29	do	4.14	15
May 6	do	4.12	9.1
7	do	4.12	10
June 28	do	3.74	.8
29	do	3.78	1.6
Oct. 4	do	3.76	1.9
Dec. 20	do	3.64	.8
1913.			
Jan. 23	F. C. Ebert	3.70	2.4
Mar. 16	do	4.15	12
Apr. 15	H. D. McGlashan	3.87	6.3
May 14	F. C. Ebert	3.61	1.6
June 20	do	3.46	.4
Oct. 3	do	3.66	.07
1914.			
Feb. 1	F. C. Ebert	3.89	6.8
1	W. E. Keenan	3.89	6.8
Mar. 3	F. C. Ebert	3.91	10
24	H. D. McGlashan	3.67	4.4
Apr. 19	F. C. Ebert	3.52	1.8
May 12	do	3.58	2.6
Aug. 21	do	3.24	b .05
21	do	3.23	b .05
Dec. 19	do	.80	1.7
19	do	.82	1.8
1915.			
Jan. 27	F. C. Ebert	.88	2.3
Feb. 1	do	1.53	30
4	do	1.67	51
5	do	1.61	41
Mar. 5	do	1.93	86
5	do	1.91	82
29	do	1.47	27
Apr. 4	do	1.36	19
May 18	do	1.92	87
July 8	do	1.15	5.5
8	do	1.15	5.4
Aug. 13	R. W. Day	1.09	1.2
Sept. 18	F. C. Ebert	.94	.8
Oct. 6	R. W. Day	.92	.4
Dec. 7	F. C. Ebert	1.08	2.6
1916.			
Feb. 6	F. C. Ebert	1.50	186
7	do	1.45	161
18	do	1.00	72
19	do	1.04	74
Mar. 13	do	.88	65
18	do	.78	46
19	do	.79	48
Apr. 13	do	.75	48
22	do	.64	35
24	do	.61	33
May 7	do	.48	21
8	do	.50	22
June 11	do	1.00	11
17	R. W. Day	.82	4.6
28	do	.82	3.3
July 16	F. C. Ebert	.87	5.0
Aug. 13	do	.67	.6
15	do	.75	1.9
Dec. 14	do	.20	1.6
1917.			
Jan. 23	F. C. Ebert	.59	17
Feb. 14	do	.40	6.8
19	do	.52	18
20	do	.51	17
Mar. 13	do	.69	22
28	do	.58	12
Apr. 15	McGlashan and Ebert	.54	11
16	do	.82	45
16	do	1.16	85
16	do	1.72	246
17	do	1.00	82
17	F. C. Ebert	.98	75
18	do	.94	53
May 23	do	.58	11
June 26	D. A. McClung	.20	1.6
Dec. 22	F. C. Ebert	.00	.8
1918.			
Jan. 1	Ebert and Ellis	—.20	.4
9	H. D. Ellis	.00	.8
13	do	.46	13
27	do	.17	3.7
Feb. 11	do	.12	1.4
20	do	.17	4.6
22	do	.54	23
Mar. 7	do	.27	6.2
8	do	.56	31
9	F. C. Ebert	.25	8.6
13	H. D. Ellis	1.52	141
19	do	1.41	25
19	do	1.65	138
May 7	F. C. Ebert	.67	2.7
29	H. D. Ellis	.46	4.4
Aug. 22	F. C. Ebert	—0.16	.3

b Estimated.

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Daily discharge, in second-feet, of Sweetwater River near Descanso, Calif., for 1907–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1	.....	.....	.....	9	36	26	57	23	13	6.0	3.2	2.8
2	.....	.....	.....	10	36	25	53	23	13	6.0	3.2	2.8
3	.....	.....	.....	9	29	24	95	23	12	6.0	3.2	2.8
4	.....	.....	.....	10	30	28	58	23	12	6.0	3.2	2.8
5	.....	.....	.....	10	26	123	58	26	13	5.5	3.2	2.8
6	.....	.....	.....	24	26	100	49	26	15	5.3	3.2	2.8
7	.....	.....	.....	29	24	95	49	24	15	5.3	3.7	2.8
8	.....	.....	.....	29	22	100	49	22	15	5.3	3.7	2.6
9	.....	.....	.....	39	24	85	49	22	13	5.5	3.4	2.6
10	.....	.....	.....	131	21	80	49	22	12	6.0	3.2	2.6
11	.....	.....	.....	61	23	80	44	24	10	6.0	3.0	2.6
12	.....	.....	.....	49	22	76	43	22	12	5.8	3.0	2.6
13	.....	.....	.....	49	21	67	39	20	13	5.8	3.0	2.6
14	.....	.....	.....	80	20	62	39	20	10	5.8	3.0	2.6
15	.....	.....	.....	60	18	58	38	21	8.9	5.8	3.0	2.6
16	.....	.....	.....	48	63	58	38	19	7.7	5.8	2.8	2.6
17	.....	.....	.....	55	29	44	37	19	7.7	5.8	2.8	2.6
18	.....	.....	.....	134	28	40	36	18	7.7	5.8	2.8	2.6
19	.....	.....	.....	109	26	40	33	18	7.7	5.5	2.8	2.6
20	.....	.....	.....	109	28	49	29	18	7.7	4.6	2.8	2.6
21	.....	.....	.....	98	27	58	26	16	7.7	4.6	2.8	2.6
22	.....	.....	.....	98	50	49	26	16	7.7	4.1	2.3	2.6
23	.....	.....	.....	86	33	44	25	16	7.7	3.7	2.3	2.6
24	.....	.....	.....	76	32	49	25	16	7.7	3.7	2.3	2.6
25	.....	.....	.....	62	29	80	26	16	6.5	3.7	2.3	2.6
26	.....	.....	.....	48	26	105	26	16	6.5	3.9	2.3	2.6
27	.....	.....	.....	40	27	109	25	16	6.5	3.9	2.6	2.6
28	.....	.....	.....	38	24	71	25	16	6.5	3.9	2.8	2.6
29	.....	.....	.....	38	.....	67	24	15	6.5	3.7	2.8	2.6
30	.....	.....	.....	72	.....	62	23	15	6.5	3.7	2.8	2.6
31	.....	.....	.....	48	.....	62	.....	15	.....	3.4	2.8	.....
1907–8.												
1	3.0	3.0	1.9	3.0	8	12	7	3	1.5	.5	.4	1.0
2	3.0	3.0	1.9	3.0	6	9	5	7	1.5	.5	.4	1.0
3	3.0	3.0	3.0	3.0	34	9	5	11	1.5	.5	.4	1.0
4	3.0	1.9	3.0	3.0	27	22	5	5	1.5	.5	.4	1.0
5	3.0	1.9	3.0	3.0	16	26	5	4	1.5	.5	.4	1.0
6	4.1	1.9	6.5	3.0	11	23	5	5	1.5	.4	.4	1.0
7	4.1	1.9	5.3	3.0	7	18	7	5	1.5	.4	.4	1.0
8	3.0	1.9	4.1	3.0	7	13	6	5	1.5	.4	.4	1.0
9	3.0	1.9	4.1	3.0	16	10	4	5	1.0	.4	.4	1.0
10	3.0	1.9	6.5	3.0	17	9	4	5	1.0	.4	.4	2.0
11	3.0	1.9	5.3	3.0	17	9	4	5	1.0	.4	.4	5.0
12	3.0	1.9	4.1	3.0	26	7	4	5	1.0	.4	.4	1.0
13	3.0	1.9	4.1	3.0	21	7	4	5	1.0	.4	.4	1.0
14	12	3.0	4.1	10	17	7	4	5	1.0	.4	.4	1.0
15	8.9	3.0	4.1	6.0	16	6	3	3	1.0	.4	.4	1.0
16	5.3	3.0	4.1	3.0	16	6	3	3	1.0	.4	.5	1.0
17	5.3	3.0	4.1	2.0	15	6	3	3	1.0	.4	.5	1.0
18	4.1	3.0	4.1	2.0	12	6	3	3	1.0	.4	.5	1.0
19	4.1	3.0	4.1	2.0	12	5	3	3	1.0	.4	.5	1.0
20	4.1	3.0	3.0	2.0	11	5	3	2	1.0	.4	.5	1.0
21	4.1	3.0	3.0	2.0	11	5	3	2	1.0	.4	.5	1.0
22	5.3	3.0	3.0	2.0	10	5	15	2	.5	.4	.5	1.0
23	7.7	3.0	3.0	6.0	11	5	16	2	.5	.4	.5	1.5
24	7.7	3.0	3.0	8.0	12	5	11	2	.5	.4	.5	2.0
25	6.5	3.0	3.0	12	11	7	7	2	.5	.4	.5	1.0
26	5.3	3.0	3.0	10	7	19	6	2	.5	.4	.5	1.0
27	5.3	3.0	3.0	8.0	6	16	6	2	.5	.4	.5	1.0
28	4.1	3.0	4.1	13	8	11	4	1.5	.5	.4	1.0	1.0
29	4.1	3.0	4.1	11	14	11	3	1.5	.5	.4	1.0	1.0
30	3.0	1.9	4.1	7.0	.....	9	3	1.5	.5	.4	1.0	1.0
31	3.0	.....	4.1	7.0	.....	7	.....	1.5	.....	.4	1.0	.....

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Daily discharge, in second-feet, of Sweetwater River near Descanso, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	1.0	1.0	1.0	1.1	13	1.9	91	11	9.5	4.4	3.8	4.4
2	1.0	1.0	1.0	1.4	11	1.7	75	11	9.5	3.8	3.8	4.4
3	1.0	1.0	1.5	1.4	18	1.4	68	11	9.5	3.8	3.8	4.4
4	1.0	1.0	1.5	1.4	29	1.4	61	11	8.0	3.8	3.8	4.4
5	1.0	1.0	1.5	1.4	21	1.1	61	11	8.0	3.8	3.8	5.2
6	1.0	1.0	1.5	1.4	18	.8	49	11	8.0	3.8	8.0	6.0
7	1.0	1.0	1.5	1.4	18	3.2	39	11	8.0	3.8	6.0	4.4
8	1.0	1.0	1.5	1.4	100	4.4	39	11	8.0	3.8	6.0	4.4
9	1.0	1.0	1.5	1.8	61	4.4	39	11	8.0	3.8	4.4	4.4
10	1.0	1.0	1.5	2.2	55	29	34	11	8.0	3.8	4.4	4.4
11	1.0	1.0	1.5	1.8	117	25	34	11	7.0	3.8	4.4	4.4
12	1.0	1.0	1.5	2.7	156	25	34	11	7.0	3.8	3.8	4.4
13	1.0	1.0	1.5	9.5	177	25	29	11	7.0	3.8	3.8	4.4
14	1.0	1.0	1.5	18	108	21	29	11	6.0	3.8	8.0	4.4
15	1.5	1.0	1.5	4.4	91	21	29	11	6.0	3.8	7.0	4.4
16	2.0	1.0	1.5	3.2	75	21	29	11	6.0	3.8	7.0	3.8
17	1.5	1.0	1.5	3.2	61	21	29	11	6.0	3.8	6.0	3.8
18	1.5	1.0	1.5	2.7	55	21	29	11	6.0	3.8	6.0	3.8
19	1.5	1.0	1.5	2.2	49	21	29	11	6.0	3.8	4.4	3.8
20	1.0	1.0	1.5	2.2	44	21	29	11	6.0	3.8	4.4	3.8
21	1.0	1.0	1.5	11	145	21	29	11	6.0	3.8	4.4	3.8
22	1.0	1.0	1.5	506	115	39	25	11	6.0	4.4	4.4	3.2
23	1.0	1.0	1.5	21	89	44	21	11	5.2	4.4	4.4	3.2
24	1.0	1.0	1.5	15	60	39	21	11	5.2	3.8	3.8	3.2
25	1.0	1.0	1.5	18	31	44	21	11	5.2	3.8	3.8	3.2
26	1.0	1.0	1.5	15	2.7	75	18	11	5.2	3.8	3.8	3.2
27	1.0	1.0	1.5	29	2.2	166	18	11	5.2	3.8	3.2	3.2
28	1.0	1.0	1.5	21	2.2	126	18	11	5.2	3.8	3.2	3.2
29	1.0	1.0	1.5	15	.....	117	15	9.5	4.4	3.8	3.8	3.2
30	1.0	1.0	1.5	15	.....	108	13	9.5	4.4	3.8	8.0	3.2
31	1.0	.....	1.5	13	.....	108	.....	9.5	.....	3.8	6.0	.....
1909–10.												
1	3.2	3.8	6.0	479	19	10	25	6.0	2.3	.7	.4	.1
2	3.2	3.8	5.2	116	19	10	20	6.0	2.2	.7	.4	.1
3	3.2	3.8	5.2	138	16	10	20	7.0	2.2	.7	.4	.1
4	3.2	3.8	5.2	88	15	10	19	7.0	2.2	.7	.4	.1
5	3.2	3.8	6.0	78	15	9.0	17	7.0	2.0	.7	.4	.1
6	3.8	3.8	6.0	56	15	8.0	16	6.0	2.0	.7	.4	.05
7	3.8	3.8	6.0	47	15	8.0	15	6.0	1.9	.7	.3	.05
8	3.8	4.4	6.0	38	15	8.0	15	6.0	1.9	.7	.3	.05
9	3.8	5.2	91	32	14	8.0	14	6.0	1.8	.7	.3	.05
10	3.8	6.0	29	32	14	8.0	13	5.0	1.7	.7	.3	.05
11	3.8	6.0	6.0	31	14	8.0	15	4.9	1.7	.7	.3	.0
12	3.8	6.0	6.0	27	13	7.0	19	4.6	1.6	.7	.3	.0
13	3.8	6.0	6.0	26	13	7.0	15	4.6	1.5	.9	.3	.1
14	3.8	9.5	6.0	26	13	8.0	13	4.6	1.3	.8	.2	.2
15	4.4	15	6.0	57	13	9.0	11	4.6	1.2	.7	.2	.1
16	4.4	8.0	6.0	160	13	9.0	9.0	4.6	1.1	.7	.2	.0
17	3.8	6.0	5.2	88	13	10	9.0	4.6	1.1	.7	.2	.4
18	3.8	5.2	4.4	85	12	11	9.0	4.6	1.1	.7	.2	.4
19	3.8	5.2	3.2	75	16	10	8.0	4.6	1.0	.7	.2	.4
20	3.8	4.4	11	64	22	10	8.0	4.5	1.0	.5	.2	.4
21	3.8	4.4	55	50	14	9.0	7.0	4.2	1.0	.5	.2	.4
22	3.8	4.4	18	32	12	11	7.0	4.0	1.0	.5	.2	.4
23	3.8	4.4	13	32	11	12	6.0	3.9	1.0	.5	.2	.4
24	3.8	4.4	11	30	11	10	6.0	3.8	1.0	.5	.2	.4
25	3.8	4.4	11	22	11	17	5.0	3.5	.9	.5	.2	.4
26	3.8	15	11	20	11	21	5.0	3.5	.8	.5	.2	.4
27	3.8	11	9.5	20	11	21	5.0	3.0	.8	.4	.2	.4
28	3.8	8.0	9.5	19	10	39	5.0	2.9	.8	.5	.1	.3
29	3.8	7.0	9.5	18	.....	28	6.0	2.8	.8	.5	.1	.2
30	3.8	6.0	9.5	17	.....	27	6.0	2.5	.8	.5	.1	.2
31	3.8	.....	15	16	.....	26	.....	2.3	.....	.5	.1	.....

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Daily discharge, in second-feet, of Sweetwater River near Descanso, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	0.1	1.5	2.0	0.3	107	16	18	4.2	1.1	0.4	0.6	0.5
2	.1	1.5	2.0	.3	50	17	26	3.8	.9	.4	.6	.5
3	.05	2.0	2.0	.3	69	26	19	3.4	.9	.4	.5	.5
4	.05	1.5	2.0	.2	182	146	17	3.1	.9	.4	.5	.5
5	.05	1.5	2.0	.2	182	76	14	2.8	.9	.4	.5	.5
6	.05	1.0	2.0	.2	182	28	14	2.5	.8	.5	.5	.5
7	.05	1.0	2.0	.2	182	23	22	2.2	.8	.5	.5	.5
8	.05	1.0	2.0	.2	8.0	20	17	1.9	.8	.5	.5	.5
9	.05	1.0	2.0	.3	6.0	20	10	1.6	.8	.5	.5	.5
10	.05	1.0	2.0	31	6.0	55	7.7	1.6	.8	.6	.5	.5
11	.05	1.0	2.5	168	16	43	7.7	1.6	.8	.6	.5	.4
12	.05	3.0	2.5	5	26	38	7.1	1.6	.8	.6	.5	.4
13	.1	2.0	2.5	3.7	29	30	6.1	1.6	.7	.6	.5	.4
14	.3	4.0	2.5	3.0	68	14	5.7	1.6	.7	.6	.5	.4
15	3.0	3.0	2.5	4.0	41	11	5.7	1.6	.6	.6	.5	.4
16	2.5	1.3	2.5	3.7	14	11	5.7	1.6	.6	.6	.5	.4
17	2.0	1.0	2.5	2.0	18	11	5.0	1.6	.6	.6	.5	.4
18	1.5	1.0	2.5	1.8	16	11	5.0	1.6	.5	.6	.5	.4
19	1.5	1.0	3.0	1.6	14	11	5.0	1.6	.5	.6	.4	.4
20	1.5	1.0	5.0	1.4	11	11	5.0	1.1	.4	.6	.4	.4
21	1.5	1.0	4.0	1.4	8.0	13	5.0	1.1	.4	.6	.4	.4
22	1.5	1.0	3.5	1.2	7.0	18	5.0	.9	.4	.6	.4	.5
23	1.5	1.5	3.0	1.2	6.0	18	4.2	1.1	.4	.6	.4	.5
24	1.5	1.5	3.0	4.0	7.0	13	3.5	1.2	.4	.6	.4	.5
25	1.5	1.5	3.0	4.0	10	12	3.5	1.2	.4	.6	.4	.5
26	1.5	1.5	3.0	2.6	15	12	4.6	1.4	.4	.6	.4	.5
27	1.5	1.5	3.0	2.0	15	11	5.4	1.4	.4	.8	.4	.5
28	1.5	1.5	3.0	2.4	0	11	5.0	1.4	.4	.8	.4	.5
29	1.5	1.5	3.0	2.2	.....	11	5.0	1.4	.4	.6	.4	.5
30	1.5	1.5	3.0	2.0	.....	10	4.6	1.3	.4	.6	.4	.6
31	1.5	.....	3.0	2.2	.....	8.9	.....	1.2	.....	.6	.4	.....
1911–12.												
1	.6	.7	.8	1.2	.8	1.5	26	12	3.8	1.4	.4	.6
2	.5	.7	.8	1.2	.8	12.6	20	12	3.8	1.4	.4	.6
3	.5	.7	.8	1.2	.8	2.7	12	8.5	4.9	1.1	.4	1.1
4	.5	.7	.8	1.2	.8	.8	12	8.5	3.8	1.1	.4	.6
5	.5	.7	.8	.8	.8	22	12	8.5	3.8	1.1	.4	.6
6	.6	.7	1.2	.8	.8	58	7	8.5	3.8	.8	.4	.6
7	.6	.7	1.4	.8	.8	44	5.4	8.5	2.7	.8	.4	.6
8	.6	.7	1.2	.8	.8	380	7	57	2.7	.6	.4	.6
9	.6	.7	1.1	1.2	.8	209	9.8	41	2.7	.6	.4	.6
10	.6	.7	.9	1.2	.8	20	16	16	2.7	.6	.4	.6
11	.6	.7	.9	1.2	.8	16	31	12	2.7	.4	.4	.6
12	.6	.8	.9	.8	.8	12	75	12	2.7	.4	.4	.6
13	.6	.8	.9	.8	.8	12	67	8.5	2.2	.4	.4	.6
14	.6	.8	.9	.8	.8	20	94	6.7	2.2	.4	.4	.6
15	.6	.8	.9	.8	.8	12	74	4.9	2.2	.4	.4	.6
16	.6	.8	.9	.8	.8	7	74	4.9	2.2	.4	.4	.6
17	.6	.8	1.4	.8	.8	5.4	66	4.9	2.2	.4	.4	.6
18	.6	.8	1.2	.8	.8	5.4	57	6.7	2.2	.4	.4	.6
19	.6	.8	1.1	.8	.8	5.4	49	6.7	1.7	.4	.4	.6
20	.6	.8	1.1	.8	.8	12	41	6.7	1.7	.4	.4	.6
21	.6	.8	1.1	.8	.8	9.8	27	6.7	1.7	.4	.4	.6
22	.6	.8	1.1	.8	.8	12	22	6.7	1.7	.4	.4	.6
23	.6	.8	1.1	.8	.8	12	16	6.7	1.7	.4	.4	.6
24	.6	.8	1.1	.8	.8	7.0	16	6.7	1.7	.4	.4	.6
25	.6	.8	1.4	.8	.8	5.4	16	6.7	1.7	.4	.4	.6
26	.6	.8	1.2	.8	.8	31	12	6.7	1.7	.4	.4	.6
27	.9	.8	1.2	1.2	.8	20	12	6.7	1.7	.4	.4	.6
28	.8	.8	1.5	.8	.8	16	12	6.7	1.7	.4	.6	.6
29	.8	.8	2.5	.8	.8	16	12	6.7	1.7	.4	.6	.6
30	.8	.8	1.6	.8	.....	31	12	6.7	1.4	.4	.6	.6
31	.7	.....	1.4	.8	.....	31	.....	4.9	.....	.4	.6	.....

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Daily discharge, in second-feet, of Sweetwater River near Descanso, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	0.6	0.8	1	0.8	3	4.5	9.5	3	1	0	.....	1.5
2	.6	.8	1	.8	3	4.5	9.5	3	1	.....	.....	1.5
3	.6	.8	1	.8	3	4.5	9	3	1	.....	.....	1.5
4	1	.8	1	.8	3	4.5	9	2	1	.....	.....	1.5
5	2	.8	1	.8	3.5	4.5	8.5	2	1	.....	.....	1.5
6	1.5	.8	1	.8	4.5	4.5	8	2	1	.....	.....	1.5
7	1	.8	1	.8	3.5	6.5	8	2	1	.....	.....	1.5
8	1	.8	1	.8	3	8.5	7.5	1.5	1	.....	.....	1.5
9	.8	.8	1	1	3	8.5	7.5	1.5	1	.....	.....	1.5
10	.8	.8	1	1.5	3	12	7	1.5	1	.....	.....	1.5
11	.8	.8	1	2	3	16	6.5	1.5	1	.....	.....	1.5
12	.8	.8	1	2	3	16	6.5	1.5	1	.....	.....	24
13	.8	.8	1	2.5	3	22	6	1.5	.6	.....	.....	43
14	.8	.8	1	4	3	27	6	1.5	.6	.....	.....	1.5
15	.8	.8	1	16	3	16	5.5	1	.6	.....	.....	.1
16	.8	.8	1	10	3	12	5	1	.6	.....	0	.1
17	.8	.8	1	9	3	12	5	1	.6	.....	1.5	.1
18	.8	.8	1	7	3	12	4.5	1	.6	.....	1.5	.1
19	.8	.8	.8	7	3	12	4	1	.6	.....	1.5	.1
20	.8	.8	.8	5.5	3	12	4	1	.6	.....	1.5	.1
21	.8	.8	.8	4.5	13	12	3.5	1	.6	.....	1.5	.1
22	.8	.8	.8	3.5	52	12	3.5	1	.4	.....	1.5	.1
23	.8	.8	.8	3	22	12	3	1	.4	.....	2	.1
24	.8	.8	.8	3	27	22	3	1	.4	.....	2	.1
25	.8	.8	.8	3	34	23	3	1	.4	.....	3	.1
26	.8	.8	.8	3	16	20	3	1	.4	.....	2	.1
27	.8	.8	.8	3	16	16	3	1	.4	.....	2	.1
28	.8	.8	.8	3	12	13	3	1.5	.4	.....	1.5	.1
29	.8	1	.8	3	.....	10	3	1.5	.4	.....	1.5	.1
30	.8	1.5	.8	3	.....	10	3	1.5	.4	.....	1.5	.1
31	.8	.....	.8	3	.....	10	.....	1	.....	0	1.5	.....
1913–14.												
1	.....	.....	.....	.1	5.5	16	9.5	9.5	.4	.....	.....	.....
2	.....	.....	.....	.1	4.5	14	8	9.5	.4	.....	.....	.....
3	.....	.....	.....	.1	4.5	12	7	9.5	.4	.....	.....	.....
4	.....	.....	.....	.1	4.5	12	7	8	.4	.....	.....	.....
5	.....	.....	.....	.1	3.5	11	6	7	.4	.....	.....	.....
6	.....	.....	.....	.1	3.5	9.5	6	6	.2	.....	.....	.....
7	.....	.....	.....	.1	3	8	6	5	.4	.....	.....	.....
8	.....	.....	.....	.1	3	7	5.5	4	.2	.....	.....	.....
9	.....	.....	.....	.05	3	7	5.5	4	.2	.....	.....	.....
10	.....	.....	.....	.05	3	7	5	3	.2	.....	.....	.....
11	.....	.....	.....	.05	3	7	5	3	.2	.....	.....	.....
12	.....	.....	.....	.05	3	6	4.5	2	.2	.....	.....	.....
13	.....	.....	.....	.05	3	6	4.5	2	.2	.....	.....	.....
14	.....	.....	.....	.05	2	5	4.5	2	.2	.....	.....	.....
15	.....	.....	.....	.1	2	5	4	2	.2	.....	.....	.....
16	.....	.....	.....	2	2	4	4	2	.2	.....	.....	.....
17	.....	.....	.....	.9	3.5	4	3.5	2	.2	.....	.....	.....
18	.....	.....	.....	1.5	3.5	4	3.5	2	.2	.....	.....	.....
19	.....	.....	.....	2	59	3	3	2	.2	.....	.....	.....
20	.....	.....	.....	.9	45	3	3	1.5	.2	.....	.....	.....
21	.....	.....	.....	.9	380	2	4	1.5	.2	.....	.....	.....
22	.....	.....	.....	.5	148	2	12	1.5	.2	.....	.....	.....
23	.....	.....	.....	.5	115	2	9.5	1.5	.2	.....	.....	.....
24	.....	.....	.....	.9	14	3	6	1.5	.05	.....	.....	.....
25	.....	.....	.....	6.5	42	5	5	1.5	.05	.....	.....	.....
26	.....	.....	.....	94	36	6	5	1.5	.05	.....	.....	.....
27	.....	.....	.....	350	27	7	5	1	.05	.....	.....	.....
28	.....	.....	.....	45	23	8	4	1	.05	.....	.....	.....
29	.....	.....	.....	23	.....	8	9.5	1	.05	.....	.....	.....
30	.....	.....	.....	13	.....	14	9.5	.5	.05	.....	.....	.....
31	.....	.....	.....	9	.....	9.5	.....	.5	.....	.....	.....	.....

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Daily discharge, in second-feet, of Sweetwater River near Descanso, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	0.1	0.8	1.0	1.0	50	95	22	109	37	6.5	2.5	0.9
2	.1	.8	1.0	.9	326	108	21	194	36	6.5	2.5	.9
3	.1	.8	1.0	.9	121	90	21	278	35	6.5	2.5	.9
4	.1	.8	1.0	1.2	46	95	19	480	34	6	2.5	.9
5	.1	.8	.9	1.1	34	95	19	990	32	6	2	.9
6	.2	.8	.9	1.1	30	84	19	524	31	6	2	.9
7	.2	.8	.9	1.0	28	75	19	310	30	6	2	.9
8	.3	.8	1.0	1.0	24	70	18	293	29	5.5	2	.9
9	.3	1.2	1.0	1.0	22	65	18	234	27	5.5	1.5	.9
10	.4	1.0	1.0	1.0	360	62	18	170	26	5.5	1.5	.9
11	.4	1.0	1.0	1.0	769	60	18	141	25	5.5	1.5	.8
12	.5	.9	1.6	1.0	170	58	18	137	24	5	1.5	.8
13	.5	.9	1.2	1.0	108	55	19	121	22	5	1.5	.8
14	.5	.9	1.2	1.0	81	47	21	109	21	5	1.5	.8
15	.5	.9	1.2	1.0	73	42	24	95	20	5	1	.8
16	.5	.9	1.3	1.0	76	39	21	78	19	4.5	1	.8
17	.5	.9	2.0	1.0	93	35	22	65	17	4.5	1	.8
18	.5	.9	1.7	1.0	68	31	24	106	16	4.5	1	.8
19	.6	.9	1.4	1.0	62	29	21	75	15	4.5	1	.8
20	.6	.9	1.5	1.0	108	28	21	71	14	4	1	.7
21	.8	.9	1.4	1.0	95	27	30	62	12	4	1	.7
22	.8	.9	1.3	9.0	86	27	83	57	11	4	1	.6
23	.8	.9	1.2	4.0	65	27	40	50	10	4	1	.6
24	.8	.9	1.2	3.2	55	27	37	47	9	3.5	1	.6
25	.8	.9	1.2	3.7	78	27	35	46	8	3.5	1	1.1
26	.8	.9	1.2	3.2	61	27	29	45	7	3.5	.9	1.2
27	.8	.9	1.2	2.5	52	25	28	44	7	3.5	.9	1.4
28	.8	.9	1.1	7.9	51	24	50	42	7	3	.9	1.4
29	.8	.9	1.0	220	.....	25	88	41	7	3	.9	1.4
30	.8	.9	1.0	234	.....	25	127	40	6.5	3	.9	1.4
31	.8	.....	1.0	62	.....	24	.....	39	.....	3	.9	.....
1915–16.												
1	1.3	1.3	1.0	15	.....	133	73	28	16	4.7	1.7	.....
2	1.1	1.3	1.0	13	.....	127	74	26	15	4.9	1.5	.....
3	1.1	1.3	1.1	.....	.....	111	71	26	15	4.9	1.1	.....
4	1.1	1.3	7.5	.....	.....	105	66	25	13	4.6	.8	.....
5	1.1	1.3	11	.....	.....	129	58	25	12	4.4	.6	.....
6	1.1	1.4	4.7	.....	179	100	57	25	12	4.4	.6	.....
7	1.1	2.1	3.3	.....	167	80	57	25	11	4.4	.7	.....
8	1.1	1.5	2.7	.....	179	82	56	22	11	4.4	.7	.....
9	1.1	10	2.7	.....	129	79	53	22	11	4.4	.8	.....
10	.9	204	2.7	.....	123	74	50	22	11	4.4	.8	.....
11	.9	20	2.3	.....	115	66	51	21	15	4.4	.8	.....
12	.9	1.4	2.3	.....	111	62	61	21	15	4.4	.8	.....
13	.9	1.0	2.5	19	109	59	49	20	10	4.4	.8	.....
14	.8	.9	12	21	105	56	47	20	7	13	.6	.....
15	.8	.6	16	137	102	53	44	20	6	7.6	.6	.....
16	.8	.6	12	502	98	53	42	20	5	6.1	.6	.....
17	.9	.6	9.9	2,060	88	53	38	20	5	4.9	.6	.....
18	.9	.7	5.5	1,620	77	52	37	20	5	4.4	.6	.....
19	.9	.7	4.7	769	82	47	36	18	4	3.5	.6	.....
20	.9	.7	3.9	618	77	55	38	18	3.5	3.8	.6	.....
21	.9	.7	3.9	570	77	76	36	18	3.5	3.5	.5	.....
22	.9	.7	3.5	642	71	123	33	18	4.5	3.0	.3	.....
23	.9	.7	3.3	2,420	69	144	31	18	4.5	2.6	.2	.....
24	1.0	.7	2.9	.....	66	131	31	18	5	2.6	.1	.....
25	1.1	.7	2.5	.....	66	119	29	18	5	2.2	14	.....
26	1.1	.7	2.3	.....	74	111	28	18	4.5	2.2	4.4	.....
27	1.1	.9	2.3	.....	84	98	28	17	4.5	2.2	.9	.....
28	1.1	1.0	2.3	.....	79	84	27	17	4.4	2.2	.4	.....
29	1.1	1.0	5.5	.....	111	76	27	17	4.4	2.2	.2	.....
30	1.2	1.0	10	.....	.....	71	26	17	4.4	2.0	.1	.....
31	1.2	.....	13	.....	.....	72	.....	17	.....	1.9	.1	.....

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Daily discharge, in second-feet, of Sweetwater River near Descanso, Calif., for 1907-1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916-17.												
1	2	1.9	1.4	9	7.5	27	12	12	5.0	1.4	1.0	0.9
2	3	2.1	1.4	7	7.5	25	12	12	5	1.4	1.0	.9
3	2	2.3	1.9	26	7.5	21	12	12	4.9	1.4	1.0	.9
4	2	1.9	1.4	7.5	7.5	22	12	11	5.5	1.5	1.0	.9
5	1	1.9	1.4	7.5	7.5	20	12	10	6	1.5	.9	.9
6	10	1.7	1.3	9	7.5	21	13	10	5	1.4	1.0	.9
7	9	1.4	1.3	13	7	25	12	10	5.5	1.4	1.0	.9
8	8.5	1.4	1.5	10	7.5	19	13	12	5.5	1.4	.9	.9
9	8	1.4	1.5	10	7	21	15	10	4.9	1.3	.9	.9
10	9	1.5	1.4	8.5	8	22	15	10	4.6	1.2	.9	.9
11	8	1.5	1.9	7.5	7.5	19	13	8.0	4.3	1.2	.9	.9
12	6.5	1.4	1.9	6.5	7.5	18	13	7.0	4.3	1.2	.9	.8
13	4.9	1.4	2.3	17	9	19	13	7.5	4.0	1.3	.9	.8
14	4.2	1.4	1.5	13	8	21	13	7.0	4.3	1.2	.9	.8
15	3.1	1.3	1.7	15	7	21	13	8.0	3.7	1.2	.9	.8
16	2.9	1.3	1.9	12	6.5	19	127	7.5	3.7	1.2	.9	.8
17	2.7	1.3	1.9	16	8	19	78	8.0	3.6	1.1	.9	.9
18	3.1	1.5	1.9	12	18	19	43	12.0	3.6	1.1	.9	.8
19	2.7	1.5	1.7	36	18	19	24	6.5	3.6	1.1	.9	.8
20	2.5	1.5	1.9	33	21	17	20	6.5	3.4	1.1	.9	.8
21	2.5	1.5	1.7	18	28	15	19	8.5	3.2	1.1	.9	.8
22	2.3	1.4	1.5	19	65	15	19	9.0	3.2	1.0	.9	.8
23	1.9	1.4	1.9	18	149	14	17	11	3.2	1.1	.9	.8
24	2.1	1.4	4.2	13	72	15	13	14	2.8	1.1	.9	.8
25	2.7	1.4	6	10	103	14	12	10	2.4	1.0	.9	.8
26	3.1	1.4	6.5	11	59	13	12	9	2.2	1.0	.8	.8
27	2.7	1.4	7.5	11	40	13	12	8.5	1.9	1.0	.8	.8
28	2.5	1.4	7	9.5	37	12	12	6	1.7	1.0	.8	.8
29	2.3	1.4	8	10	.....	13	12	5	1.4	1.0	.8	.8
30	2.1	1.4	9	8	.....	12	11	5.5	1.4	1.0	.8	.9
31	1.9	.....	9.5	7.5	.....	12	.....	6	.....	1.0	.8	.....
1917-18												
1	.9	.8	.9	.4	3.2	4.8	31	5.5	3.5	4.0	.....	.....
2	.9	.8	.9	.5	3.4	5	31	4.0	3.7	4.4	.....	.....
3	.8	.8	.9	.6	3.8	5	30	3.0	3.5	4.4	.....	.....
4	.8	.8	.9	.7	3.6	5	30	2.5	3.5	4.0	.....	.....
5	.9	.8	.9	.8	3.0	4.8	29	2.5	3.5	3.5	.....	.....
6	.9	.9	.9	.8	1.4	5	28	2.5	3.5	3.0	.....	.....
7	.9	.8	.8	.8	1.0	7	28	2.5	3.5	3.0	.....	.....
8	.9	.9	.8	.8	1.0	22	27	2.5	3.5	3.2	.....	.....
9	.9	.9	.9	.9	1.0	12	26	2.5	4.0	2.4	.....	.....
10	.9	.9	.9	.9	1.0	10	26	2.6	4.0	2.2	.....	.....
11	.8	.9	.9	.9	1.0	630	24	2.7	4.0	1.6	.....	.....
12	.8	.9	.9	.9	1.0	910	20	2.8	4.0	1.0	.....	.....
13	.8	.9	.8	8	1.0	130	17	2.8	4.0	.8	.....	.....
14	.9	.9	.8	3.6	1.0	100	15	3.0	4.0	.5	.....	.....
15	.9	.9	.8	3.2	1.0	80	14	3.1	4.0	.4	.....	.....
16	.9	.9	.9	3.2	1.0	60	15	3.2	35	.4	.....	.....
17	.9	.9	.8	2.8	1.0	40	14	3.3	2.0	.4	.....	.....
18	.8	.9	.8	2.5	6.5	24	14	3.4	1.8	.4	.....	.....
19	.8	.9	.8	2.2	6.5	82	14	3.5	3.0	.4	.....	.....
20	.8	.9	.8	2.2	6	40	14	3.6	.7	.4	.....	.....
21	.9	.9	.8	2.2	7	28	13	3.7	.5	.4	.....	.....
22	.8	.9	.8	2.1	19	36	13	3.8	.8	.4	.....	.....
23	.8	.9	.9	2.2	8.5	40	13	3.9	1.2	.3	.....	.....
24	.8	.9	.9	2.4	7	40	13	4.0	1.8	.3	.....	.....
25	.8	.9	.9	2.2	7	40	13	4.1	2.4	.3	.....	.....
26	.8	.9	.9	2.7	6	36	13	4.2	2.9	.3	.....	.....
27	.8	.9	.9	3.6	5	35	11	4.3	3.2	.3	.....	.....
28	.8	.9	.8	3.8	4.7	35	10	4.4	3.2	.3	.....	.....
29	.8	.9	.8	3.2	.....	34	9.5	4.4	3.7	.3	.....	.....
30	.8	.9	.8	3.2	.....	34	7	4.0	4.0	.3	.....	.....
31	.8	.....	.9	3.0	.....	33	.....	3.7	.....	.3	.....	.....

NOTE: Daily discharge determined as follows: 1909: Jan. 1 to Dec. 31, from rating curves well defined below 130 second-feet; Feb. 22-25, Mar. 1-2, discharge interpolated.

1910: Jan. 1 to Feb. 14, from poorly defined rating curves; Feb. 15 to Mar. 2, shifting-control method; Mar. 3-12, from poorly defined curves; Mar. 13 to Apr. 25, by shifting-control method; Apr. 26 to Oct. 15, from fairly well defined curves; Oct. 16 to Dec. 31, by shifting-control method.

1911-12: Jan. 1 to Mar. 7, 1911, by shifting-control method; May 1-8, 1911, interpolated; Mar. 8, 1911, to Mar. 8, 1912, from fairly well defined curves; Mar. 9, to Apr. 14, 1912, Apr. 15 to June 12, and June 13 to Sept. 30, from fairly well defined rating curves.

1912-13 and 1913-14: Discharge determined by shifting-control method and from rating curves covering short periods. July 1 to Aug. 16, 1913, water standing in pools; no discharge. Oct. 1 to Dec. 31, 1913, and July 1 to Sept. 30, 1914, stream practically dry.

1914-15: Rating curve used Oct. 11, 1914, to May 24, 1915, well defined below 100 second-feet. Records June to September, 1915, roughly approximate.

1916: No record Jan. 3-12 and Jan. 24 to Feb. 5. Gage not read Feb. 17 and July 1; discharge interpolated Practically no flow Sept. 1-30; Oct. 1-5, discharge estimated. Gage not read Nov. 21-23: discharge interpolated.

1917-18: Gage not read Oct. 28 to Nov. 3, 1917, Jan. 2-5, 1918, June 10-15, 1918, and July 28-31, 1918, discharge interpolated. No record during August and September, 1918.

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Monthly discharge of Sweetwater River near Descanso, Calif., for 1906-1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906.				
January	44	2.0	8.7	534
February	86	4.2	22.3	1,240
March	1,250	17.0	180	11,100
April	84	26	48.5	2,890
May	36	13	21.6	1,330
June	15	2.6	7.0	418
July	2.6	1.2	1.8	112
August	4.6	1.1	1.8	108
September	5.8	1.0	1.5	90
The period				17,800
1906-7.				
October	1.4	1.0	1.1	68
November	12	1.1	3.0	177
December	66	4.4	10.1	121
January	134	9	56.7	3,490
February	63	18	28.6	1,590
March	123	24	65.0	4,000
April	95	23	39.8	2,370
May	26	15	19.6	1,210
June	15	6.5	9.8	583
July	6.0	3.4	5.0	307
August	3.7	2.3	2.9	178
September	2.8	2.6	2.6	155
The year	134	1.0	20.3	14,200
1907-8.				
October	12	3.0	4.5	277
November	3.0	1.9	2.6	155
December	6.5	1.9	3.8	234
January	13	2	4.9	301
February	34	6	13.8	794
March	26	5	10.2	627
April	16	3	5.4	321
May	11	1.5	3.6	221
June	1.5	.5	1.0	60
July	.4	.4	.4	25
August	1.0	.4	.5	31
September	20	1.0	1.8	107
The year	34	.4	4.38	3,150
1908-9.				
October	2.0	1	1.0	61
November	1.0	1	1.0	60
December	1.5	1	1.5	92
January	506	1.1	24.0	1,480
February	177	2.2	61.6	3,420
March	166	.8	37.4	2,300
April	91	13	35.2	2,090
May	11	9.5	10.9	670
June	9.5	4.4	6.65	396
July	4.4	3.8	3.87	238
August	8.0	3.8	4.88	300
September	6.0	3.2	4.00	238
The year	506	.8	16.0	11,300
1909-10.				
October	4.4	3.2	3.74	230
November	15	3.8	6.08	362
December	91	5.2	12.8	787
January	479	16	65.1	4,000
February	22	10	13.9	772
March	39	7	12.9	793
April	25	5	11.6	690
May	7	2.3	4.66	287
June	2.3	.8	1.39	83
July	.9	.4	.63	39
August	.4	.1	.25	15
September	.4	.0	.208	12
The year	479	.0	11.1	8,070
1910-11.				
October	3	0.05	0.955	59
November	4	1	1.51	90
December	5	2	2.66	164
January	168	.2	8.05	495
February	182	.0	46.2	2,570
March	146	8.9	24.4	1,500
April	26	3.5	8.95	533
May	4.2	.9	1.81	111
June	1.1	.4	.63	37
July	.8	.4	.57	35
August	.6	.4	.46	28
September	.6	.4	.47	28
The year	182	.0	8.06	5,650
1911-12.				
October	.9	.5	.62	38
November	.8	.7	.76	45
December	2.5	.8	1.14	70
January	1.2	.8	.90	55
February	.8	.8	.80	46
March	380	.8	33.8	2,080
April	94	5.4	30.4	1,810
May	57	4.9	10.5	646
June	4.9	1.4	2.45	146
July	1.4	.4	.58	36
August	.6	.4	.43	26
September	1.1	.6	.62	37
The year	380	.4	6.94	5,040
1912-13.				
October	2	.6	.86	53
November	1.5	.8	.83	49
December	1	.8	.92	57
January	.16	.8	3.51	216
February	52	3	9.09	505
March	27	4.5	12.2	750
April	9.5	3	5.58	332
May	3	1	1.48	91
June	1	.4	.70	42
July	0	.0	0	0
August	3	.0	.84	52
September	43	.1	2.87	171
The year	52	.0	3.21	2,320
1913-14.				
October			.10	6
November			.17	10
December			.11	7
January	350	.05	17.8	1,090
February	380	2	33.9	1,880
March	16	2	7.0	430
April	12	3	5.82	346
May	9.5	.5	3.19	196
June	.4	.05	.205	12
July			.05	3
August			.05	3
September			.05	3
The year	380		5.52	3,990
1914-15.				
October	.8	.1	.51	31
November	1.2	.8	.89	53
December	2.0	.9	1.18	73
January	234	.9	18.4	1,130
February	769	22	114	6,330
March	108	24	49.9	3,070
April	127	18	31.7	1,890
May	990	39	164	10,100
June	37	6.5	19.8	1,180
July	6.5	3	4.69	288
August	2.5	.9	1.40	86
September	1.4	.6	.91	54
The year	990	.1	33.5	24,300

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Monthly discharge of Sweetwater River near Descanso, Calif., for 1906–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1915–16.				
October	1.3	0.8	1.01	62
November	204	.6	8.69	517
December	16	1.0	5.14	316
January	.....	.....	.....	.....
February	179	66	102	4,860
March	144	47	86.5	5,320
April	74	26	45.1	2,680
May	28	17	20.5	1,260
June	16	3.5	8.24	490
July	13	1.9	4.15	255
August	14	.1	1.20	74
September	.0	0	.00	0
1916–17.				
October	10	1	3.91	240
November	2.3	1.3	1.52	90.4
December	9.5	1.3	3.09	190
January	36	6.5	13.2	812
February	149	6.5	26.4	1,470
March	27	12	18.1	1,110
April	127	11	20.8	1,240
May	14	5	9.02	555
1916–17.				
June	6	1.4	3.79	226
July	1.5	1.0	1.19	73.2
August	1.0	.8	.900	55.3
September	.9	.8	.843	50.2
The year	149	.8	8.44	6,110
1917–18.				
October	.9	.8	.84	51.6
November	.9	.8	.88	52.4
December	.9	.8	.85	52.3
January	8	.4	2.17	133
February	19	1.0	4.02	223
March	910	4.8	82.8	5,090
April	31	7	18.8	1,120
May	5.5	2.5	3.42	210
June	35	.5	4.08	243
July	4.4	.3	1.42	87.3
August	.....	.....	[a] 1.00	61.5
September	.....	.....	[a] 1.00	59.5
The year	910	.....	10.2	7,380

[a] Estimated.

SWEETWATER RIVER NEAR DEHESA, CALIF.

LOCATION.—In NW. ¼ NW. ¼ sec. 20, T 16 S., R. 2 E., 1,000 feet below mouth of Lawson Creek and about 3 miles southeast of Dehesa, San Diego County.

DRAINAGE AREA.—112 square miles (measured on topographic maps).

ELEVATION.—About 900 feet above sea level.

RECORDS AVAILABLE.—December 4, 1913, to July 31, 1916.

GAGE.—Bristol water-stage recorder on left bank 100 feet above control; vertical staff, in two sections, bolted to solid rock at same site. February 5, 1915, water-stage recorder was moved downstream to a point on left bank 5 feet above control. Original datum was maintained but gage readings differ on account of slope of water surface between the two sites. Water-stage recorder not in operation after April 10, 1915. Staff was destroyed by the flood on January 17, 1916. March 19, 1916, a new staff was installed at same site but at an independent datum.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet below concrete control or by wading. Cable was destroyed by the flood of January, 1916 and was not replaced.

CHANNEL AND CONTROL.—Sand overlying solid rock; shifting. Both banks are high and not subject to overflow. A concrete control, extending to bedrock, has been constructed. December 8, 1915, it was raised 1.33 feet. (See Pl. V, *B*, p. 16.) This control was destroyed by the flood of January, 1916.

EXTREMES OF DISCHARGE.—1913–1916: Maximum stage recorded, 15.5 feet January 27, 1916 (discharge, 24,295 second-feet). Practically no flow August 12 to October 31, 1915.

DIVERSIONS.—About 0.3 second-foot is diverted for irrigation at Ellis ranch near Descanso.

REGULATION.—None.

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ACCURACY.—Stage-discharge relation not permanent. Rating curves for 1914 and 1915 well defined except for extremely high and low stages; curves for 1916 fairly well defined. Gage read to hundreths twice daily after April 10, 1915. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph, or from staff gage readings; discharge for periods not covered by rating tables interpolated between measurements when change in stage was slight, or computed by shifting-control method. Records fair.

Discharge measurements of Sweetwater River near Dehesa, Calif., for 1914-1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Jan. 30	Chas. Fulton	0.90	20	July 9	Covert and Fulton	0.65	5
Feb. 22	J. F. Covert	2.30	179	Dec. 8	F. C. Ebert	.28	3.9
22	Chas. Fulton	1.80	87	18	J. B. Rainey	.23	7.2
Mar. 7	F. C. Ebert	.80	10	18	C. F. Fulton	.23	6.8
11	Chas. Fulton	.75	9.1	20	H. D. McGlashan	.17	4.7
25	J. F. Covert	.68	5.5	23	C. F. Fulton	.20	4.7
1915.				23	J. B. Rainey	.20	4.8
Jan. 31	J. F. Covert	2.00	132	26	do	.18	4.2
Feb. 5	do	1.70	69	26	do	.18	4.0
12	Owen	3.00	397	29	do	.22	7.1
12	do	2.75	316	1916.			
14	do	2.1	171	Mar. 20	J. B. Rainey	1.88	99.
17	do	1.93	130	30	do	2.08	96
28	C. L. Fulton	1.65	86	Apr. 7	do	1.78	83
Mar. 7	Owen	2.00	138	15	do	1.63	85
15	C. L. Fulton	1.60	75	22	do	1.43	67
Apr. 1	F. C. Ebert	1.01	35	29	do	1.28	59
1	R. W. Day	1.01	34	May 5	do	1.08	46
5	J. F. Covert	.97	32	June 22	do	.50	14
14	C. L. Fulton	1.25	38	July 21	Sweetwater Water Co.	.36	7.1
June 22	do	1.00	15				

Daily discharge, in second-feet, of Sweetwater River near Dehesa, Calif., for 1913-1915

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913-14.												
1				0.8	18	23	6.8	14	2.5	0.2	0.05	
2				1.1	16	20	6.0	12	2.5	.2	.05	
3				1.3	14	18	6.0	11	2.3	.2	.1	
4			0.3	1.3	12	17	6.8	9.4	1.7	.2	.1	
5			.4	1.1	10	15	6.8	8.1	1.2	.1	.1	
6			.6	1.1	10	12	7.4	6.8	1.5	.1	.1	
7			.6	1.3	9.4	10	6.8	6.8	1.8	.1	.1	
8			.6	1.3	8.4	10	7.1	6.5	2.5	.1	.1	
9			.4	1.4	7.4	10	9.4	6.8	2.1	.1	.1	
10			.4	1.4	7.4	10	11	6.8	1.7	.1	.1	
11			.3	1.3	6.8	8.7	11	6.5	1.3	.1	.1	
12			.4	1.2	6.5	8.1	8.4	6.5	1.0	.1	.1	
13			.4	1.4	7.8	8.1	6.8	6.3	.8	.1	.1	
14			.4	1.1	8.7	8.1	6.8	5.2	.7	.1	.05	
15			.4	1.3	7.4	7.8	6.8	5.8	.5	.05	.05	
16			.4	2.4	6.3	7.4	6.8	6.8	.4	.05	.05	
17			.4	6.8	6.5	6.8	8.1	7.4	.3	.05	.05	
18			.3	6.8	9.4	6.8	11	7.4	.3	.05	0	
19			.3	10	64	6.8	11	6.3	.3	.05	0	
20			.3	6.8	87	6.8	8.4	4.7	.3	.05	0	
21			.4	5.0	237	7.4	7.8	4.2	.3	.05	.05	
22			.5	4.2	207	8.1	8.1	4.2	.3	.05	.05	
23			.6	4.5	91	6.8	10	4.2	.3	.05	.05	
24			.4	5.0	57	6.3	8.7	3.9	.3	.05	.05	
25			.4	5.5	41	6.3	8.1	3.9	.3	.05	.05	
26			.4	22	28	9.7	7.8	3.7	.2	.05	.1	
27			.4	281	26	7.8	6.8	3.4	.2	.05	.1	
28			.4	110	26	10	10	3.4	.2	.05	.1	
29			.4	24		8.7	10	3.2	.2	.05	.1	
30			.4	16		14	11	3.0	.2	.05	.05	
31			.5	15		10		2.5		.05	.05	

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Daily discharge, in second-feet, of Sweetwater River near Dehesa, Calif., for 1913–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	.....	0.1	0.6	1.0	68	198	39	140	49	9	0.5	.....
2	.....	.1	.4	1.0	202	240	34	250	47	9	.5	.....
3	.....	.1	.4	1.0	392	183	36	360	45	8	.4	.....
4	.....	.1	.4	1.0	140	172	36	625	42	8	.4	.....
5	.....	.1	.4	1.0	85	179	32	1,290	40	7	.4	.....
6	.....	2	.4	1.3	79	156	28	680	38	7	.3	.....
7	.....	.2	.4	1.3	63	133	27	405	36	6	.3	.....
8	.....	.2	.4	1.4	55	114	27	380	33	5	.2	.....
9	.....	.2	.4	1.8	55	117	29	305	31	5	.2	.....
10	.....	.2	.4	1.5	219	122	25	220	29	5	.1	.....
11	.....	.3	.6	1.4	909	131	30	185	27	4	.....	.....
12	.....	.3	.9	1.4	369	119	34	180	24	3	.....	.....
13	.....	.4	.6	1.3	233	101	36	160	22	3	.....	.....
14	.....	.4	.4	1.3	154	87	38	140	20	3	.....	.....
15	.....	.4	.4	1.5	124	84	31	125	18	3	.....	.....
16	.....	.3	.4	1.5	124	81	27	100	15	3	.....	.....
17	.....	.3	.6	1.4	124	78	29	85	15	3	.....	.....
18	.....	.3	1.1	1.3	104	75	31	140	15	3	.....	.....
19	.....	.3	1.5	1.3	96	72	27	100	15	2.5	.....	.....
20	.....	.4	1.4	1.4	148	70	27	92	15	2.5	.....	.....
21	.....	.4	1.1	1.7	187	68	39	81	15	2	.....	.....
22	.....	.4	.9	6.5	124	66	110	74	15	2	.....	.....
23	.....	.4	.9	7.1	119	50	52	65	15	1.5	.....	.....
24	.....	.3	.9	4.7	103	50	48	61	14	1.5	.....	.....
25	.....	.3	1.1	4.7	129	42	46	60	13	1	.....	.....
26	.....	.3	1.3	5.2	116	41	38	58	13	1	.....	.....
27	.....	.3	1.4	5	96	40	36	57	12	.9	.....	.....
28	.....	.3	1.3	10	87	39	65	55	11	.8	.....	.....
29	.....	.3	1.2	284	.....	42	115	53	11	.7	.....	.....
30	.....	.3	1.0	302	.....	39	165	52	10	.6	.....	.....
31	.....	.....	1.0	80	.....	37	.....	51	.....	.5	.....	.....
1915–16.												
1	0.1	.....	.....	7.5	.....	.....	95	54	33	9.0	.....	.....
2	.1	.....	.....	7.5	.....	.....	91	52	32	7.5	.....	.....
3	.1	.....	.....	7.5	.....	.....	95	51	30	7.5	.....	.....
4	.1	.....	.....	7.5	.....	.....	99	50	29	7.0	.....	.....
5	.1	.....	.....	7.5	.....	.....	95	47	29	7.0	.....	.....
6	.1	.....	.....	7.5	.....	.....	91	46	28	6.0	.....	.....
7	.1	.....	.....	.....	.....	.....	88	46	26	4.9	.....	.....
8	.1	.....	4	.....	.....	.....	87	46	26	4.9	.....	.....
9	.1	.....	4	.....	.....	.....	82	46	24	3.6	.....	.....
10	.1	.....	4	.....	.....	.....	*83	46	22	3.6	.....	.....
11	.1	.....	4	.....	.....	.....	83	46	22	4.9	.....	.....
12	.1	.....	4	.....	.....	.....	87	46	20	3.8	.....	.....
13	.1	.....	4	.....	.....	.....	82	45	15	6.0	.....	.....
14	.1	.....	6.5	.....	.....	.....	82	44	13	17	.....	.....
15	.1	1.5	9	.....	.....	.....	80	44	12	18	.....	.....
16	.1	.....	.....	.....	.....	.....	76	41	13	9.5	.....	.....
17	.1	.....	.....	.....	.....	.....	74	42	13	7.5	.....	.....
18	.1	.....	7	.....	.....	.....	73	42	13	7.5	.....	.....
19	.1	.....	7	.....	.....	95	72	42	13	7.0	.....	.....
20	.1	.....	4.5	.....	.....	108	68	46	13	6.0	.....	.....
21	.1	.....	4.5	.....	.....	117	62	42	13	5.5	.....	.....
22	.1	.5	.....	.....	.....	121	65	42	14	4.4	.....	.....
23	.1	.4	5	.....	.....	153	63	40	11	3.8	.....	.....
24	.1	.....	.....	.....	.....	137	61	39	11	3.8	.....	.....
25	.1	.4	.....	.....	.....	127	59	40	11	3.8	.....	.....
26	.1	.....	4	.....	.....	119	58	37	11	3.2	.....	.....
27	.1	.....	.....	.....	.....	114	58	36	9.0	3.0	.....	.....
28	.1	.....	.....	.....	.....	110	58	35	8.5	3.0	.....	.....
29	.1	.4	7	.....	.....	108	57	35	8.0	3.0	.....	.....
30	.1	.4	8	.....	.....	104	57	35	8.0	3.0	.....	.....
31	.1	.....	7.5	.....	.....	97	.....	34	.....	3.0	.....	.....

NOTE.—1914–15: Apr. 28 to May 5, 1914, water-stage recorder not operating satisfactorily, record somewhat uncertain. Jan. 28–31, 1915, no gage-height record, discharge estimated from record of flow at Descanso; Apr. 15 to June 15, 1915, discharge estimated as 130 per cent of flow at Descanso; June 16 to Aug. 11, interpolated between measurements. Channel practically dry after Aug. 11.

1915–16: Discharge Oct. 1, 1915, to Jan. 5, 1916, determined from rating curves covering short periods and by shifting-control method. No record as follows: Nov. 1–14, 16–21, 24, 26–28; Dec. 1–7, 16–17, 22, 24–25, 27–28, 1915; Jan. 6 to Mar. 18, 1916.

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Monthly discharge of Sweetwater River near Dehesa, Calif., for 1913–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913–14.					**1914–15.**				
December	0.6	0.3	0.42	23	January	302	1.0	23.8	1,460
January	281	.8	17.5	1,080	February	909	55	168	9,330
February	237	6.3	37	2,050	March	240	37	97.6	6,000
March	23	6.3	10.2	627	April	165	25	44.6	2,650
April	11	6	8.25	491	May	1,290	51	214	13,200
May	14	2.5	6.15	378	June	49	10	23.5	1,400
June	2.5	.2	.94	56	July	9	.5	3.60	221
July	.2	.05	.085	5	August	.5	0	.11	7
August	.1	0	.069	4					
September[a]			.05	3	The year	1,290	.0	47.4	34,300
The period	281	0	8.09	4,720	**1915–16.**				
1914–15.					October	.1	.1	.10	6
October[a]	.05	.05	.05	3	April	99	57	76.0	4,520
November	.4	.1	.27	16	May	54	34	43.1	2,650
December	1.5	.4	.78	48	June	33	8.0	17.7	1,050
					July	18	3.0	6.05	372

[a] Estimated.

SWEETWATER RIVER AT SWEETWATER RESERVOIR, CALIF.

The following record of run-off has been furnished by the Sweetwater Water Co. (see Pl. VII, *A*, p. 44) through John F. Covert, chief engineer:

Run-off of Sweetwater River at Sweetwater reservoir, Calif.

[Drainage area, 181 square miles.[a]]

Season (Oct. 1–Sept. 30).	Rainfall at Sweetwater reservoir (inches).	Total run-off (acre-feet).	Season (Oct. 1–Sept. 30).	Rainfall at Sweetwater reservoir (inches).	Total run-off (acre-feet).
1887–1888		7,048	1902–1903	9.55	0
1888–1889	13.64	25,253	1903–1904	5.11	0
1889–1890	17.96	20,532	1904–1905	16.05	13,760
1890–1891	11.76	21,565	1905–1906	16.24	35,000
1891–1892	9.90	6,198	1906–1907	12.83	30,000
1892–1893	11.62	16,260	1907–1908	11.74	4,140
1893–1894	6.20	1,338	1908–1909	10.87	16,007
1894–1895	16.21	73,412	1909–1910	10.28	9,619
1895–1896	7.45	1,321	1910–1911	11.81	3,160
1896–1897	11.87	6,892	1911–1912	11.11	5,000
1897–1898	7.05	4	1912–1913	7.20	915
1898–1899	5.74	245	1913–1914	11.63	3,525
1899–1900	6.50	0	1914–1915	15.74	27,085
1900–1901	9.27	825	1915–1916	15.68	160,580
1901–1902	7.96	0			

[a] Measured on topographic maps by U. S. Geological Survey.

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MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the Sweetwater River basin at points other than those at which gaging stations are maintained are recorded in the following table:

Miscellaneous discharge measurements in Sweetwater River drainage basin.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
Jan. 27, 1916	Sweetwater River	NW. ¼ NW. ¼ sec. 20, T. 16 S., R. 2 E.		[a]2 4,295
Do	do	Sec. 14, T. 16 S., R. 1, ¼		[a]27,530
Do	do	Jamacho Canyon		43,002
Mar. 7, 1914	do	1½ miles above Sweetwater dam		12
Jan. 27, 1916	do	Sweetwater dam		[b]45,500
Mar. 10, 1918	do	Dehesa		14.
May 8, 1911	Ellis flume	Intake near Descanso		.3
June 28, 1912	do	do		.1
Oct. 3, 1912	do	do		.2
Oct. 3, 1913	do	do		.25
Jan. 1, 1918	do	do		.11
8, 1918	do	do		.15

[a] Computed from cross sections and slope data. [b] Computed from data collecteda t reservoir.

SAN DIEGO RIVER BASIN.

GENERAL FEATURES.

San Diego River rises in the Cuyamaca Mountains, on the western slope of the Coast Range, and flows in a southwesterly direction, discharging into Pacific Ocean through Mission Bay, at the northern boundary of San Diego City. Its length is about 50 miles, half of which lies in the mountains above the town of Lakeside. The San Diego basin comprises 434 square miles and lies directly south of the San Dieguito basin and north of Sweetwater River basin.

The San Diego has several small tributaries, the most important being Coleman, Cedar, Boulder, South Fork, and Chocolate creeks all of which enter from the east and south above Lakeside. San Vicente Creek, the only important tributary from the north, enters the river at Lakeside.

The upper part of the basin above Lakeside, is extremely rough and rugged, but below Lakeside numerous valleys and high mesa lands extend to the coast. Elevations throughout the basin range from 50 to 600 feet in the foothills and from 600 to 6,000 feet in the mountains. Cuyamaca Peak, the highest point in the basin, is 6,028 feet above sea level.

The geologic formation of the basin is fully described in the report on the geology and ground waters of the western part of San Diego County, which is published as Water-Supply Paper 446.

The San Diego basin is very poorly forested. The timber is confined almost entirely to the valley along the streams and to the higher mountain areas. The mountain slopes are fairly well covered

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with brush, but the lower foothills are almost entirely bare, supporting only a scattered growth of low brush.

The mean annual rainfall ranges from 10 to 15 inches along the foothill belt, and from 20 to 45 inches in the mountains.

Irrigation is carried on extensively in the valleys and on the mesa lands between Lakeside and San Diego, and additional areas might be irrigated if an adequate supply of water could be assured. Two storage reservoirs have been constructed: The Cuyamaca reservoir is on Boulder Creek, 4,600 feet above sea level, and has a capacity of 11,400 acre-feet with a 35-foot earthern dam. La Mesa reservoir is in the foothills about 2 miles northwest of the town of La Mesa at an elevation of 435 feet. The original dam was constructed of earth and rock, was 66 feet high, and had a storage capacity of about 1,500 acre-feet. It has recently been replaced by the Murray dam, a concrete multiple-arch dam, 100 feet high, a short distance farther downstream (Pl. VIII, p. 45). La Mesa reservoir is filled by water diverted from San Diego River through Cuyamaca Water Co.'s flume.

GAGING-STATION RECORDS.

SAN DIEGO RIVER AT DIVERTING DAM NEAR LAKESIDE, CALIF.

LOCATION.—In NE. ¼ NE. ¼ sec. 11, T. 14 S., R. 2 E., at intake of Cuyamaca Water Co.'s flume, about 1,000 feet below mouth of Boulder Creek, and 13 miles northeast of Lakeside, San Diego County. (See Pl. IX, *A*.)

DRAINAGE AREA.—102 square miles (measured on topographic maps).

ELEVATION.—About 800 feet above sea level.

RECORDS AVAILABLE.—October 1, 1912, to September 30, 1916.

GAGE.—Painted on upstream face of dam near left bank, February 22, 1916. Original datum not maintained. Gage previously used was a vertical staff fastened to upstream face of dam near left bank. A Friez water-stage recorder, at same site and datum, was in use January 16, 1912, to November 14, 1914.

DISCHARGE MEASUREMENTS.—Made from cable one-fourth mile below dam or by wading.

CHANNEL AND CONTROL.—Sand; shifting above and below dam. The concrete diversion dam acts as a control.

EXTREMES OF DISCHARGE.—1912–1916: Maximum stage recorded, January 28, 1916, gage height not reported (discharge, 15,800 second-feet); no flow over dam for several months during each year.

DIVERSIONS.—The intake of Cuyamaca Water Co.'s flume is at left end of diverting dam. No diversions above.

REGULATION.—See Boulder Creek near Julian for amount of water released from storage in Cuyamaca reservoir. Capacity of Cuyamaca reservoir, 11,400 acre-feet.

ACCURACY.—Stage-discharge relation permanent for flow over dam. Rating curve fairly well defined except for flood stages. Gage read to hundredths three times daily. Daily discharge ascertained by applying mean daily gage height to rating table or by applying to rating table mean daily gage height determined by inspecting recorder graph. Total discharge of river obtained by combining flow over dam and through waste gates with discharge of Cuyamaca Water Co.'s flume. Discharge through waste gates was computed by Cuayamaca Water Co. from record of gate openings. Records good.

COOPERATION.—Record for 1915–16 furnished by Cuyamaca Water Co.

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Discharge measurements of San Diego River at diverting dam near Lakeside, Calif., for 1913–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Jan. 16	W. S. Post	9.82	60	Feb. 3	F. C. Ebert	10.20	269
1914.				6	do	9.80	57
Jan. 20	F. C. Ebert	9.62	11	1916.			
28	do	10.08	168	Apr. 14	do		57
				May 24	D. A. McClung		12

NOTE.—These measurements show only discharge over dam.

Daily discharge, in second-feet, of San Diego River at diverting dam near Lakeside, Calif., for 1913–1916.

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.
1913.					1913.				
1			2		16	27		3	
2				2	17	28			
3				1	18	10			
4					19	5			
5					20	2		1	
6					21	.5	2		
7		2			22		70	6	
8		.5			23		10	10	2.4
9					24		2	.5	
10					25		55	5	
11					26		40	5	
12					27		55		
13			4		28		28		.1
14			1		29				
15					30				
					31				

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1913–14.								
1			12	28		19		
2			3	23		23		
3				19		10		
4				15		2		
5				17		(a)		
6			(a)	4				
7			2	(a)				
8				(a)		4	0.5	
9						4		
10						.5		
11					3			
12						.5		
13								
14		1				2		
15		4				2		
16		8				2		
17	1	10				2		
18		12		.5		2		
19		17	295	1				
20		15	135					
21		9	1,260					
22		8	425					
23	.5	8	255		28			
24		12	117		1			
25		15	72					
26	(a)	190	50					
27	(a)	925	36					
28		135	31	10				
29		55		1	4			
30		31		19	33			
31		14		1				

a Discharge for day less than one-half second-foot.

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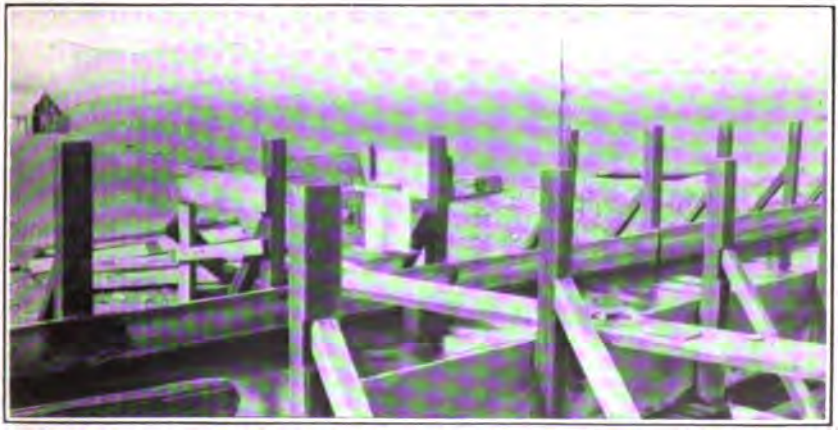
A.

B.



C.

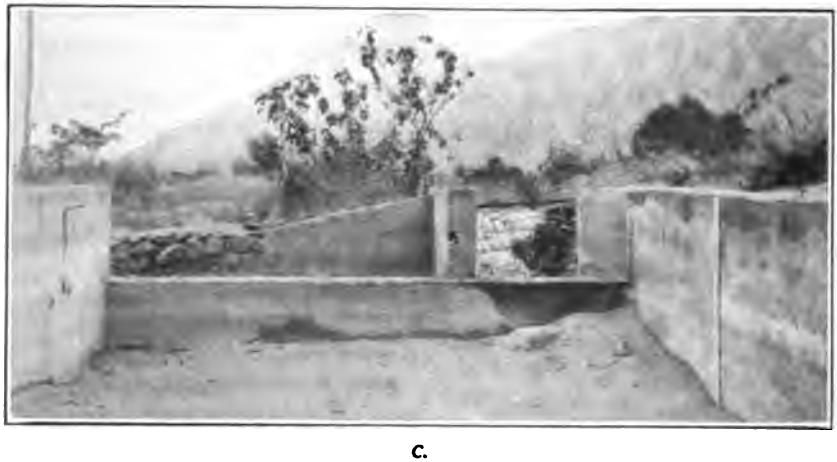
GAGING STATIONS.

A, **San Diego River at diverting dam, near Lakeside, Calif.; *B,* Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif.; *C,* Cuyamaca Water Co.'s flume at Los Coches Creek, near Lakeside, Calif.**

Digitized by Google

A.

B.



C.

GAGING STATIONS.

A, **Santa Maria Creek near Ramona, Calif.;** ***B,*** **Santa Ana River near Mentone, Calif., showing vertical staff gage;** ***C,*** **Tunnel diversion near Azusa, Calif., showing weir.**

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Daily discharge, in second-feet, of San Diego River at diverting dam near Lakeside, Calif., for 1913–1916—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1914–15.								
1			58	319	2	126	31	1.5
2			295	203		222	31	
3			362	146		287	28	
4			157	130		416	28	
5			83	126		1,520	28	
6			55	94		380	26	
7			33	90		216	24	
8			24	126		152	17	
9			15	69		117	12	2
10			530	83		80	10	.5
11			850	83		52	10	
12			509	69		31	10	
13			222	55		130	10	
14			162	50		117	8.5	
15			112	42	19	90	7	
16			168	39	14	90	5	
17			179	19	6	83	3	
18			130	14	3	389	2	
19			94	12		99		
20			179	8.5		86		
21			157	10	.5	69		
22			104	10	174	72	2	
23		3.5	90	9	90	69	1	
24			112	7	168	55		
25			162	4.5	104	55		
26			99	3.5	66	50		
27			86	4.5		47		
28			72	10		42		
29		425		23		42		
30		488		8.5	152	39		
31		130		7		33		
1915–16.								
1			890	305	94	12		.6
2			850	267	92	10		2.5
3			760	206	92	9		2.5
4			610	188	95	9		2.5
5			330	244	90	9		2.5
6			300	202	225	9		2.5
7			240	175	319	9		1.0
8			260	165	60	9		
9			220	159	56	9		
10			210	123	56	9		
11			190	119	57	9		
12			170	114	60	11		
13		36	160	109	10	10		
14		54	150	103	62	14		.5
15		147	145	94	62	8.5		
16		1,581	145	89	62	8.5		
17		4,410	145	88	51	8		
18		2,655	140	80	23	8	1	
19		1,815	140	78	30	8.5		
20		727	130	105	23	18		
21		409	150	183	19	12		
22		276	125	129	19	9		
23		205	110	236	19	8.5		
24		264	111	207	18	8.5		
25		509	106	191	17	8.5		
26		929	153	163	16	8.5		
27		10,200	133	159	15	8		
28		10,900	185	123	12	7.5	1	
29		5,910	176	119	12	7.5	25	
30		3,070		112	12	6	25	
31		2,227		103		6		

NOTE.—No flow over dam on days for which discharge is not given. No gage height record Jan. 28 to Feb. 21, 1916. Discharge Jan. 1–12, 1916, estimated at 31 second-feet.

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Monthly discharge of San Diego River at diverting dam near Lakeside, Calif., for 1912–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912–13.					**1914–15.**				
January	28	.0	2.34	144	January	488	0	33.8	2,080
February	70	.0	9.45	562	February	850	15	182	10,100
March	10	.0	1.21	74	March	319	3.5	60.5	3,720
April	2.4	.0	.18	11	April	174	0	26.6	1,580
The year	70	.0	1.04	791	May	1,520	31	170	10,500
1913–14.					June	31	0	9.78	582
December	1	.0	.05	3	July	2	0	.13	8
January	925	.0	47.4	2,910	The year	1,520	0	39.4	28,600
February	1,260	.0	96.2	5,340	**1915–16.**				
March	28	.0	4.47	275	January	10,900	.....	1,510	92,800
April	28	.0	2.3	137	February	890	106	256	14,700
May	23	.0	2.35	144	March	305	78	153	9,410
June	.5	.0	.01	.6	April	319	10	59.3	3,530
The year	1,260	.0	12.2	8,810	May	18	6	9.27	570
					June	2.5	.0	.23	14
					July	2.5	.0	47	29
					The year	10,900	.0	167	121,000

NOTE.—Flow over dam only. No discharge for months for which record is not given.

Combined daily discharge, in second-feet, of San Diego River and flume at diverting dam near Lakeside, Calif., for 1912–1916.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	3.0	3.3	2.3	2.5	4.3	39	28	6.1	6.0	7.8	4.4	3.6
2	3.0	3.8	2.4	1.4	4.0	43	34	5.3	5.3	7.4	4.1	2.9
3	2.6	4.0	4.0	2.6	4.0	40	37	3.2	4.7	7.4	3.8	2.8
4	10	3.5	4.0	2.8	4.0	36	27	3.2	4.8	6.5	3.6	2.7
5	10	4.5	3.5	2.9	4.0	41	24	3.2	4.4	5.8	3.5	1.7
6	11	4.1	3.1	1.5	4.0	37	17	3.2	4.4	5.8	3.3	2.8
7	6.9	3.8	3.5	1.1	6.0	35	17	4.0	4.2	6.1	3.3	3.7
8	4.8	3.8	3.3	1.4	10	29	18	4.0	4.2	7.4	3.3	4.0
9	3.7	4.0	3.2	.5	8.7	23	24	5.2	4.4	7.8	3.3	3.6
10	2.0	3.8	3.1	2.7	7.1	24	18	5.4	4.2	8.0	3.5	2.1
11	2.0	3.8	3.2	5.6	5.5	22	12	5.2	4.2	8.0	3.5	2.2
12	3.2	3.5	3.3	8.0	5.5	40	11	5.2	5.8	7.6	3.3	3.7
13	3.1	3.5	3.3	7.2	5.5	50	11	4.9	5.9	8.2	3.3	3.7
14	4.2	3.5	3.3	5.5	5.1	49	11	4.9	5.9	8.2	3.3	3.8
15	3.1	3.6	3.5	4.4	4.8	8.2	12	4.0	6.1	8.0	3.3	3.3
16	4.1	3.7	3.6	33	4.5	12	12	2.8	6.1	8.0	3.3	2.9
17	3.6	3.8	3.6	37	4.2	21	13	2.6	6.7	7.6	3.2	3.0
18	3.5	3.0	3.5	19	4.2	24	13	2.7	4.8	7.8	3.5	3.0
19	3.1	3.0	3.5	14	4.2	27	13	2.7	4.5	7.2	3.7	3.3
20	3.0	3.5	3.3	10	4.2	30	14	2.7	5.1	5.8	4.0	3.2
21	3.0	3.7	3.3	8.6	6.2	32	14	2.7	6.7	5.5	4.0	3.2
22	2.7	4.0	3.1	9.0	83	19	13	2.9	6.7	5.3	3.8	3.0
23	3.2	4.0	3.1	8.8	42	54	4.0	3.0	7.2	4.8	3.6	3.3
24	3.5	3.3	.9	7.9	39	52	8.2	3.0	8.0	4.5	3.5	3.0
25	3.5	3.6	2.0	6.7	92	55	7.6	3.7	8.0	3.8	3.5	3.5
26	3.2	3.5	3.2	5.0	77	55	6.1	4.4	8.0	3.5	3.6	2.8
27	3.6	3.5	3.0	4.2	92	37	6.1	4.2	8.2	3.5	3.6	3.2
28	3.5	2.9	2.7	3.8	65	29	6.0	4.1	8.9	4.0	3.6	3.0
29	3.2	2.7	3.0	3.8	.....	28	5.5	4.0	8.0	4.5	3.7	3.2
30	3.5	2.7	3.3	4.0	.....	24	5.8	4.8	7.1	4.5	4.2	2.9
31	3.3	.....	2.7	3.8	.....	22	.....	4.9	.....	4.5	4.1	.....

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Combined daily discharge, in second-feet, of San Diego River and flume at diverting dam near Lakeside, Calif., for 1912–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	3.5	.....	0.0	5.5	31	56	22	32	5.5	0.0	4.1	3.8
2	2.5	.....	.0	8.3	22	51	19	37	5.5	.0	3.2	3.8
3	2.1	.....	4.0	4.3	19	47	16	30	5.5	.0	2.4	3.5
4	2.3	.....	.0	5.9	19	43	15	27	5.7	.0	3.2	3.5
5	2.2	.....	.0	12	15	45	14	24	5.7	.0	3.9	2.8
6	2.4	.....	.0	9.5	16	32	15	23	5.1	.0	2.9	3.2
7	2.5	.....	.0	.0	18	26	17	14	3.9	.0	4.3	3.0
8	2.3	.....	4.6	.0	8.7	25	17	15	12	.0	3.9	3.6
9	1.4	.....	.6	.0	11	24	14	16	9.6	5.0	3.5	3.3
10	2.8	.....	.0	.0	11	25	14	16	11	3.0	3.2	2.1
11	2.7	.....	.0	.0	11	24	17	14	6.4	2.0	2.4	1.5
12	2.4	.....	.0	1.0	11	23	14	14	3.8	3.5	2.4	1.9
13	2.0	.....	3.0	1.0	13	23	14	12	6.2	4.6	3.2	1.9
14	2.2	.....	.6	1.0	12	19	13	13	3.8	4.3	3.2	2.0
15	2.7	.....	.0	4.0	11	18	12	13	4.7	4.4	3.0	2.3
16	2.3	.....	.0	8.0	9.4	20	11	14	3.3	4.6	3.2	2.3
17	2.4	.....	4.4	10	7.8	18	11	13	.1	4.6	3.3	2.1
19	2.4	.....	.9	12	11	16	11	15	.0	3.0	3.3	2.0
19	2.4	.....	.0	17	302	17	6.0	9.1	.0	3.3	3.3	1.9
20	2.2	.....	3.1	16	145	16	6.4	8.3	.0	3.8	3.8	1.4
21	2.6	.....	.6	9.0	1,260	15	7.2	7.4	.0	3.0	3.8	1.2
22	1.6	.....	6.9	9.2	444	15	12	7.8	.0	3.0	3.9	1.5
23	1.3	.....	24	8.0	279	14	49	7.6	.0	2.9	3.8	1.8
24	1.2	.....	3.8	12	145	15	28	7.8	.0	2.6	3.2	1.8
25	.5	.....	.0	15	94	14	26	7.8	.0	2.8	3.2	1.8
26	.2	.....	4.1	190	79	14	19	8.3	.0	2.6	3.6	1.6
27	.0	.....	20	925	64	17	16	7.4	.0	2.8	3.5	1.6
28	.0	.....	3.0	143	59	27	15	7.6	.0	2.8	3.5	1.4
29	.6	.....	13	73	.....	23	20	7.0	.0	2.8	3.2	1.8
30	.5	.....	6.5	50	.....	43	48	6.6	.0	2.9	3.2	1.2
31	.0	.....	5.5	33	.....	25	.....	5.7	.....	3.3	3.6	.....
1914–15.												
1	.....	2.0	.....	3.0	83	349	39	224	60	16.5	8.0	8.0
2	.....	1.6	.....	2.9	312	231	36	321	60	15	6.7	8.4
3	6.0	2.3	.....	2.6	364	186	35	399	57	14.5	6.9	6.9
4	3.5	3.8	.....	2.5	159	174	34	528	57	14.5	8.7	7.6
5	1.9	4.9	.....	2.4	96	170	34	1,620	57	14	8.4	8.0
6	2.0	3.3	.....	2.4	65	138	35	492	54	12.5	8.4	6.7
7	1.7	3.3	.....	2.4	56	134	35	338	52	12	8.4	8.9
8	1.5	3.3	.....	2.4	49	170	34	277	45	10.5	8.7	8.9
9	1.1	3.3	.....	1.8	40	108	30	242	40	12.5	9.6	8.7
10	.9	3.9	.....	1.9	546	120	28	205	38	11	9.3	9.8
11	1.4	3.2	.....	2.5	851	118	26	176	38	11	9.3	9.8
12	1.9	3.3	.....	2.6	509	106	26	137	37	9.6	8.9	9.8
13	1.6	1.9	.....	2.4	229	91	27	161	35	7.3	7.8	9.8
14	1.4	2.5	.....	2.4	174	87	28	148	34	9.3	7.1	8.2
15	1.2	2.3	.....	2.4	114	79	46	121	32	8.2	7.1	8.2
16	1.3	1.3	.....	2.4	176	76	40	121	30	6.9	7.3	8.4
17	1.2	.....	.....	2.4	187	56	32	114	28	9.1	6.3	8.2
18	1.2	.....	.....	2.5	138	51	29	420	27	7.8	6.3	4.8
19	1.3	.....	.....	1.9	113	48	28	130	25	7.6	6.3	4.8
20	1.3	.....	.....	2.1	195	46	54	117	25	8.2	7.3	5.0
21	1.5	.....	.....	2.4	174	47	16.5	100	21	8.0	7.6	6.5
22	1.6	.....	.....	6.2	126	47	184	103	23	7.8	6.5	6.3
23	1.6	.....	4.3	19	117	46	100	98	23	8.2	5.8	6.3
24	1.6	.....	4.3	18	143	44	178	84	22	8.7	5.4	6.3
25	1.9	.....	3.8	12.5	192	42	114	84	22	12	6.3	6.5
26	2.3	.....	3.0	12.5	131	40	102	79	18	8.9	7.3	6.5
27	2.5	.....	3.9	15	118	42	124	76	18	8.7	4.8	6.7
28	2.0	.....	4.3	9.4	104	47	102	71	18	8.4	4.8	5.4
29	1.9	.....	3.6	434	.....	60	121	71	17.5	8.7	5.4	5.6
30	1.9	.....	3.6	498	.....	46	238	68	14	8.7	6.1	5.6
31	1.9	.....	3.3	144	.....	44	.....	62	.....	7.6	6.7	.....

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Combined daily discharge, in second-feet, of San Diego River and flume at diverting dam near Lakeside, Calif., for 1912-1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915-16.												
1	5.0	4.8	3.4	.....	890	305	94	38	15.5	8.4	5.2	3.0
2	6.1	5.0	4.1	.....	850	267	92	36	14.5	7.7	3.7	3.0
3	6.1	5.0	5.9	.....	760	206	92	35	13	6.5	3.7	2.4
4	5.9	5.5	4.2	.....	610	188	95	35	12.5	6.2	3.7	3.1
5	6.1	5.7	4.8	.....	330	244	90	35	11	6.2	3.7	3.0
6	6.3	7.4	4.8	.....	300	202	225	35	10	6.3	3.7	4.0
7	5.9	4.8	4.8	.....	240	175	319	35	5.2	6.9	4.0	4.0
8	5.9	2.5	4.8	.....	260	165	64	35	13.5	6.6	4.3	3.8
9	6.1	2.0	4.8	.....	220	159	60	36	14	5.9	4.4	4.6
10	6.1	2.3	10.5	.....	210	123	60	35	14	6.1	3.7	5.4
11	6.5	2.4	9.0	.....	190	119	61	36	14	5.4	3.8	5.7
12	6.1	2.5	7.2	.....	170	114	63	32	14	5.7	3.7	5.7
13	5.9	2.5	1.4	36	160	109	23	30	14	5.2	3.7	5.7
14	5.9	2.5	1.8	54	150	103	88	34	14	12	3.4	5.2
15	5.9	2.4	.1	147	145	94	88	28	14	8.5	3.0	4.9
16	5.9	2.2	.0	1,581	145	89	88	28	8.7	8.0	3.0	6.1
17	7.2	2.2	.0	4,410	145	88	77	26	7.6	6.1	3.8	6.8
18	4.8	2.2	.0	2,655	140	80	49	27	6.7	5.6	4.3	6.6
19	4.4	2.4	.0	1,815	140	78	56	28	11.5	5.7	5.7	7.2
20	5.4	2.5	.0	727	130	105	49	44	9.6	5.7	5.2	9.1
21	4.4	3.6	.8	409	150	183	45	38	12	5.2	4.6	7.6
22	5.4	3.6	.1	276	125	129	45	35	12.5	5.0	4.0	7.0
23	5.4	3.6	.0	205	110	236	45	27	12.5	4.9	5.4	7.4
24	5.4	3.6	.4	264	111	207	44	26	12	4.6	3.1	7.0
25	5.4	3.6	1.2	509	106	191	43	26	10	4.4	3.0	6.8
26	4.8	3.4	3.1	929	153	163	42	26	10	4.0	5.6	7.4
27	4.8	3.4	4.4	10,200	133	159	41	26	7.6	3.7	4.0	8.7
28	4.8	3.4	.3	10,900	185	123	38	24	8.0	3.7	3.3	8.3
29	4.2	3.4	.6	5,910	176	119	38	24	9.5	3.7	3.1	7.4
30	4.2	3.6	7.2	3,070	.....	112	38	22	9.5	3.7	3.1	9.6
31	4.2	.....	15.5	2,227	.....	103	.....	22	.....	4.2	3.0	.....

NOTE.—Records for 1913-16 include discharge through waste gates in dam. Mean discharge Jan. 1-12, 1916, 31 second feet.

Combined monthly discharge of San Diego River and flume at diverting dam near Lakeside, Calif., for 1912-1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912-13.					**1914-15.**				
October	11	2.0	4.07	250	October 3-31	6.0	0.9	1.83	105
November	4.5	2.7	3.58	213	November 1-16	4.9	1.3	2.89	92
December	4.0	.9	3.12	192	December 23-31	4.3	3.0	3.79	68
January	37	.5	7.38	454	January	498	1.8	39.3	2,420
February	92	4.0	21.4	1,190	February	851	40	199	11,100
March	55	8.2	33.5	2,060	March	349	40	98.2	6,040
April	37	4.0	14.7	875	April	238	16.5	65.2	3,880
May	6.1	2.6	3.94	242	May	1,620	62	232	14,300
June	8.9	4.2	5.95	354	June	60	14	34.2	2,040
July	8.2	3.5	6.28	386	July	16.5	6.9	10.1	621
August	4.4	3.2	3.60	221	August	9.6	4.8	7.21	443
September	4.0	1.7	3.10	184	September	9.8	4.8	7.35	437
The year	92	.5	9.15	6,620	**1915-16.**				
1913-14.					October	7.2	4.2	5.50	338
October	3.5	.0	1.81	111	November	7.4	2.0	3.47	206
November	.0	.0	.00	0	December	15.5	0	3.39	208
December	24	.0	3.50	215	January	10,900	.....	1,510	92,800
January	925	.0	51.1	3,140	February	890	106	256	14,700
February	1,260	7.8	112	6,220	March	305	78	153	9,410
March	56	14	25.5	1,570	April	319	38	75.1	4,470
April	49	6.0	17.3	1,030	May	44	22	31.1	1,910
May	37	5.7	14.2	873	June	15.5	6.7	11.4	678
June	12	.0	3.26	194	July	12	3.7	5.86	360
July	5.0	.0	2.50	154	August	5.7	3.0	3.93	242
August	4.3	2.4	3.36	207	September	9.6	2.4	5.88	347
September	3.8	1.2	2.25	134					
The year	1,260	.0	19.1	13,800	The year	10,900	.0	173	126,000

NOTE.—Records for 1913-1916 include discharge through waste gates of dam.

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SAN DIEGO RIVER AT LAKESIDE, CALIF.

LOCATION.—In El Cajon grant, just above ford on Lakeside-Padre Barona Valley road, three-fourths of a mile above Cuyamaca & Eastern Railroad bridge, three-fourths of a mile north of Lakeside, San Diego County, and about a mile above mouth of San Vicente Creek.

DRAINAGE AREA.—203 square miles (measured on topographic maps).

ELEVATION.—About 400 feet above sea level.

RECORDS AVAILABLE.—December 3, 1905, to September 30, 1916.

GAGE.—Staff gage in three sections on left bank 100 feet above ford. The site and datum unchanged since station was established.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading. Equipment was destroyed by flood of January, 1916.

CHANNEL AND CONTROL.—Sand; shifting. Both banks are fairly high; overflow unusual. Right bank was overflowed for a considerable distance during the flood of January, 1916.

EXTREMES OF DISCHARGE.—1905–1916: Maximum stage recorded, 12.6 feet January 27, 1916 (discharge not determined; see San Diego River near Santee and at San Diego); no flow for long periods each year.

DIVERSIONS.—Cuyamaca Water Co.'s flume heads at diverting dam about 1,000 feet below Boulder Creek and about 15 miles above station. Several pumping plants, 1 to 3 miles above station, obtain water for irrigation from wells along the banks of stream.

REGULATION.—Cuyamaca reservoir, on headwaters of Boulder Creek, has a capacity of 11,400 acre-feet. See also Boulder Creek near Julian.

ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths at low and medium stages, half-tenths at other times; usually twice daily with more frequent readings during high water. Daily discharge ascertained by applying mean daily gage height to rating table or, for periods not covered by fairly well defined rating curves, by shifting-control method and by interpolating between discharge measurements when change in stage was slight. Records fair.

Discharge measurements of San Diego River at Lakeside, Calif., for 1906–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1906.		*Feet.*	*Sec.-ft.*	1907.		*Feet.*	*Sec.-ft.*
Jan. 9	W. V. Hardy	2.67	0.4	Jan. 10	W. V. Hardy	4.10	234
24	do	3.04	12.5	18	do	4.60	667
Feb. 6	do	2.90	1.3	19	do	4.20	419
12	do	3.20	42	20	do	4.00	303
20	do	3.28	45	Feb. 4	do	3.75	105
22	do	3.54	100	11	do	3.60	74
22	do	3.50	92	23	do	3.90	152
22	do	3.40	67	Mar. 4	do	3.62	81
Mar. 9	do	3.10	17	5	do	4.15	335
13	do	4.50	714	5	do	4.35	623
13	do	4.80	995	5	do	4.50	576
14	do	4.10	280	11	do	3.85	187
15	do	3.90	201	18	do	3.75	116
Apr. 7	do	4.50	403	23	do	3.95	268
17	do	4.25	183	Apr. 1	do	3.90	189
21	do	4.15	98	13	do	3.80	145
24	do	4.07	130	24	do	3.65	91
30	do	4.25	186	May 3	do	3.60	62
May 1	do	3.92	96	17	do	3.54	33
9	do	3.86	62	25	do	3.48	26
12	do	3.94	89	31	do	3.49	20
June 20	C. H. Lee	3.45	2.8	June 8	do	3.50	23
Aug. 8	R. S. Hawley	3.39	.3	13	do	3.52	30
Dec. 19	W. V. Hardy	3.30	1.0	July 22	W. A. Lamb	3.30	.62
1907.				Dec. 14	W. V. Hardy	3.16	.57
Jan. 3	W. V Hardy	3.65	39	19	do	3.18	.66
8	do	3.80	82	30	do	3.20	1.10

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Discharge measurements of San Diego River at Lakeside, Calif., for 1906–1916—Contd.

Date.	Made by—	Gage-height.	Discharge.
		Feet.	*Sec.-ft.*
1908.			
Jan. 3	W. V. Hardy	3.20	1.0
14	do	3.22	1.2
18	do	3.23	1.4
24	do	3.36	13
24	do	3.40	23
25	do	3.50	30
28	do	3.60	105
Feb. 10	do	3.80	133
15	do	3.60	84
22	do	3.50	44
26	do	3.45	39
Mar. 3	do	3.50	40
4	do	3.60	62
5	do	3.80	132
13	do	3.48	30
20	do	3.45	26
25	do	3.38	14
Apr. 1	do	3.41	19
6	do	3.40	17
12	do	3.34	4.5
17	do	3.35	3.9
25	do	3.45	21
28	do	3.31	4.8
May 5	do	3.45	16
13	do	3.38	5.2
26	do	3.27	.5
July 7	do	3.26	.2
1909.			
Jan. 21	W. V. Hardy	3.11	1.0
22	Beadle and Hardy	6.00	2,500
22	do	7.00	3,440
23	do	4.60	1,090
23	W. V. Hardy	4.55	946
23	do	4.20	457
24	do	3.80	236
25	do	3.60	162
Feb. 3	do	3.33	50
19	do	3.50	130
27	do	3.60	200
Mar. 6	do	3.52	105
7	Hardy and Thum	3.52	105
11	W. V. Hardy	3.38	71
22	do	3.60	163
25	do	3.58	141
28	Beadle and Thum	4.25	457
Apr. 6	W. V. Hardy	3.70	165
8	do	3.50	96
12	F. Thum and H. Thum	3.45	98
17	W. V. Hardy	3.40	67
23	do	3.35	43
May 2	F. Thum and H. Thum	3.30	29.8
9	Beadle and Thum	3.22	23.1
25	W. V. Hardy	3.20	10.3
Dec. 29	R. E. Haines	3.04	15.2
1910.			
Jan. 12	W. V. Hardy	3.50	152
21	do	3.33	100
28	do	3.22	65
Feb. 12	do	3.14	38
18	do	3.17	36
24	do	3.18	44
28	do	3.15	36
Mar. 5	do	3.13	22
11	do	3.12	18
23	do	3.13	20
Apr. 1	do	3.37	68
3	do	3.28	54
16	do	3.20	30
25	do	3.07	2.7
27	do	3.02	1.1
May 6	do	3.06	2.6
17	do	3.02	.82
19	do	3.00	.33
June 2	do	2.97	.31
6	do	2.95	.23
Nov. 19	do		.0
1911.			
Feb. 10	W. V. Hardy	2.92	18
Mar. 9	do	3.47	108
1911.			
Mar. 10	W. V. Hardy	3.95	272
11	do	3.60	176
Apr. 18	do	3.10	12
May 9	do	3.03	.7
Oct. 9	F. C. Ebert		.0
1912.			
Mar. 27	W. V. Hardy	3.52	98
28	do	3.30	68
29	do	3.20	46
30	do	3.62	153
Apr. 13	do	3.94	240
May 1	do	2.93	27
4	do	2.88	21
7	do	2.86	16
25	do	2.87	13
June 6	do	2.80	.7
29	do	2.78	a.6
1913.			
Mar. 15	F. C. Ebert	2.77	34
16	do	2.60	12
17	do	2.65	15
18	do	2.62	9.2
Apr. 15	do	2.56	1.5
17	H. D. McGlashan	2.52	1.2
May 12	F. C. Ebert	2.42	a.2
1914.			
Jan. 27	F. C. Ebert	4.35	810
29	do	2.80	95
31	do	2.37	20
Feb. 2	do	2.32	12
Mar. 2	do	2.43	42
3	do	2.40	40
6	do	2.33	26
24	H. D. McGlashan	2.17	1.4
1915.			
Jan. 29	F. C. Ebert	2.46	94
30	do	4.35	1,170
31	do	3.16	252
Feb. 1	do	2.56	88
2	do	3.26	414
3	K. B. Sleppy	4.08	854
5	F. C. Ebert	2.68	121
8	K. B. Sleppy	2.19	43
9	F. C. Ebert	2.14	34
Mar. 3	do	3.07	252
4	do	3.07	251
6	do	2.88	203
8	Ebert and Keenan	2.80	174
9	F. C. Ebert	2.74	153
18	R. W. Day	2.48	66
26	do	2.35	46
27	F. C. Ebert	2.74	153
31	do	2.38	45
Apr. 2	R. W. Day	2.33	38
3	F. C. Ebert	2.32	37
9	R. W. Day	2.28	23
May 18	F. C. Ebert	3.03	242
June 21	McClung and Ellis	2.18	13
July 8	F. C. Ebert	2.07	.6
Aug. 2	do	1.81	a.1
1916.			
Feb. 20	F. C. Ebert	5.50	267
21	do	5.55	275
Mar. 13	do	5.35	181
15	do	5.35	180
18	do	5.20	130
18	do	5.22	149
21	do	5.40	397
Apr. 15	do	5.25	98
21	do	5.13	64
26	do	5.16	66
May 8	do	5.12	36
27	D. A. McClung	5.02	28
June 12	F. C. Ebert	5.00	8.4
28	do	4.94	3.0
July 17	do	4.89	1.8
Aug. 12	do		.0
29	do	3.50	.0

a Estimated.

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Daily discharge, in second-feet, of San Diego River at Lakeside, Calif., 1907–1916.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1907.							
1	83	260	71	222	83	23	0.6
2	100	142	75	254	63	23	.4
3	40	105	60	320	62	23	.3
4	27	105	65	258	61	23	.4
5	27	95	530	260	78	23	.2
6	145	95	310	260	75	23	.4
7	122	83	318	225	95	23	.6
8	83	75	330	196	73	35	.6
9	83	75	264	200	57	23	.4
10	230	75	208	172	56	23	.3
11	475	60	187	172	55	23	.2
12	145	45	215	172	54	23	.4
13	83	40	210	148	53	23	.4
14	122	45	151	125	52	23	.4
15	170	32	147	128	38	13	.4
16	145	42	170	145	37	13	.4
17	145	240	140	145	35	13	.5
18	1,050	124	115	127	27	8	.6
19	419	102	122	108	28	8	.5
20	308	77	111	.108	28	8	.5
21	308	75	290	108	27	8	.6
22	260	72	280	108	28	8	.5
23	217	68	236	91	29	8	.4
24	142	55	200	91	30	8	.6
25	142	44	168	110	31	8	.6
26	105	77	940	88	29	4	.4
27	95	79	595	106	27	4	.5
28	95	65	345	68	25	3	.5
29	95	.....	235	83	24	2	.4
30	142	.....	200	103	23	.6	.4
31	95	.....	220	.....	23	.....	.3

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1907–8.									
1	.....	0.3	1.0	15	72	24	4	0.5	0.2
2	.....	.3	1.0	14	42	23	4	.5	.2
3	.....	.3	1.0	98	40	18	6	.5	.2
4	.....	.3	1.0	300	50	18	25	.5	.2
5	.....	.3	1.0	110	132	17	16	.5	.2
6	.....	.3	1.0	43	115	17	14	.4	.2
7	.....	.5	1.0	41	78	15	12	.4	.2
8	.....	.5	1.0	21	62	13	10	.4	.2
9	.....	.5	1.0	28	61	11	8	.4	.2
10	0.5	.3	1.0	205	18	9	7	.4	.2
11	.3	.5	1.0	155	35	7	6	.4	.2
12	.3	.5	1.0	140	34	5	6	.4	.2
13	.3	.5	1.0	180	33	5	5	.4	.2
14	.1	.5	1.0	112	26	5	5	.4	.2
15	.1	.5	13	84	26	4	5	.4	.2
16	.1	.5	23	81	26	4	3	.3	.2
17	.3	.5	23	80	26	4	3	.3	.2
18	.3	.5	1.5	48	26	5	2	.3	.1
19	.3	1.0	1.5	46	26	5	2	.3	.1
20	.3	.5	1.0	45	26	4	2	.3	.1
21	.3	.5	1.0	44	26	4	1	.3	.1
22	.3	.5	1.0	44	18	8	1	.3	.1
23	.3	.5	3.0	60	17	30	1	.3	.1
24	.3	1.0	23	48	12	29	1	.3	.1
25	.3	1.0	30	49	16	21	1	.3	.1
26	.3	1.0	66	39	60	14	.5	.2	.0
27	.3	1.0	30	28	93	14	.5	.2	.0
28	.3	1.0	54	26	60	8	.5	.2	.0
29	.3	1.0	100	35	35	4	.5	.2	.0
30	.3	1.0	62	.....	25	4	.5	.2	.0
31	.....	1.0	34	.....	25	.....	.5	.....	.0

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Daily discharge, in second-feet, of San Diego River at Lakeside, Calif., 1907–1916—Con.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1908–9.									
1	.....	0.2	50	135	135	31	9	5	1
2	.....	.2	45	125	120	30	9	5	1
3	.....	.2	55	105	105	29	9	5	260
4	.....	.2	235	110	85	28	9	5	125
5	.....	.2	145	105	105	27	9	5	125
6	.....	.2	110	105	125	26	8	4	2
7	.....	.2	110	105	100	25	8	4	1
8	.....	.2	1,310	100	96	24	8	4	1
9	.....	.2	225	70	96	23	8	4	.....
10	.....	.2	170	70	96	22	8	4	.....
11	.....	.2	285	75	97	22	8	4	.....
12	.....	.2	285	75	98	21	8	4	.....
13	.....	1.0	810	50	92	20	7	4	.....
14	.....	5.0	390	50	86	19	7	3	.....
15	.....	10	265	50	80	19	7	3	.....
16	.....	8.0	240	50	74	18	7	3	.....
17	0.1	6.0	215	55	67	17	7	3	.....
18	.1	4.0	170	55	63	16	7	3	.....
19	.1	3.0	150	55	59	15	7	3	.....
20	.1	2.0	150	55	55	15	7	3	.....
21	.2	1.0	850	55	51	14	6	3	.....
22	.2	[a] 2,550	320	180	47	13	6	2	.....
23	.2	850	290	160	43	12	6	2	.....
24	.2	200	240	175	42	11	6	2	.....
25	.2	162	220	150	40	10	6	2	.....
26	.2	160	200	105	39	10	6	2	.....
27	.2	120	200	360	37	10	6	2	.....
28	.2	200	145	390	36	10	6	2	.....
29	.2	165	.....	265	34	10	5	2	.....
30	.2	95	.....	190	33	9	5	1	.....
31	.2	55	.....	150	.....	9	.....	1	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1909–10.								
1	.....	391	65	46	69	3.6	0.6	0.4
2	.....	462	86	38	62	3.6	.6	.4
3	.....	355	70	30	74	3.6	.6	.6
4	.....	273	56	22	54	3.0	.2	.6
5	1	217	36	22	52	5.0	.2	.6
6	1	164	56	20	47	2.4	.2	.6
7	1	149	50	30	54	3.0	.3	.3
8	1	149	56	32	47	2.4	.6	.2
9	1	120	56	32	32	2.0	.6	.....
10	225	156	56	24	29	1.6	.4	.....
11	30	138	43	18	32	1.6	.2	.....
12	6	156	41	27	52	1.2	.1	.....
13	4	120	30	17	80	1.2	.1	.....
14	3	102	29	12	54	1.2	.4	.....
15	2	102	27	14	43	.6	.3	.....
16	2	238	35	25	30	1.0	.4	.....
17	2	355	27	15	26	.8	.3	.....
18	2	176	36	17	18	1.0	.4	.....
19	2	138	44	17	22	1.2	.3	.....
20	4	120	50	20	20	.8	.3	.....
21	75	102	124	17	14	1.0	.3	.....
22	90	86	52	22	11	1.0	.4	.....
23	50	71	46	23	11	.8	.4	.....
24	85	62	44	22	5.0	1.0	.4	.....
25	35	59	46	20	2.7	1.2	.4	.....
26	20	80	49	43	4.3	1.2	.4	.....
27	20	70	37	54	2.0	1.2	.6	.....
28	20	62	39	125	1.2	1.2	.4	.....
29	15	65	.....	194	1.0	1.0	.4	.....
30	15	56	.....	176	1.2	.8	.6	.....
31	15	50	.....	109	.....	.8	.....	.....

[a] Maximum discharge 3,700 second-feet.

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Daily discharge, in second-feet, of San Diego River at Lakeside, Calif., 1907-1916—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1910-11.							1910-11.						
1	.....	2	84	17	9	2	16	.....	97	67	16	1.2	0.2
2	.....	4	56	88	9	.2	17	.....	65	58	12	.4	.2
3	.....	16	38	44	3	.2	18	.....	50	52	12	.2	.2
4	.....	655	290	33	2	.2	19	.....	40	46	10	.2	.2
5	.....	375	167	29	.3	.2	20	.....	37	40	8	.2	.2
6	.....	123	113	29	.3	.2	21	.....	23	40	8	.2	.2
7	.....	93	80	57	.3	.2	22	.....	18	40	11	.2	.2
8	.....	43	120	83	.3	.2	23	.....	20	40	11	.2	.2
9	.....	32	117	55	.3	.2	24	.....	18	35	7	.2	.2
10	.....	18	140	43	.5	.2	25	.....	24	32	7	.2	.2
11	.....	14	176	32	.2	.2	26	32	37	27	5	.2	.2
12	.....	16	133	22	.2	.2	27	22	30	20	10	.2	.2
13	.....	37	105	16	.2	.2	28	14	56	21	11	.2	.2
14	.....	295	75	16	.2	.2	29	14	.....	17	10	.2	.2
15	.....	116	72	16	.2	.2	30	12	.....	15	9	.2	.2
							31	14	.....	17	.....	.2	.....

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Day.	Mar.	Apr.	May.	June.	July.	Aug.
1911-12.							1911-12.						
1	.....	150	29	2	0.2	0.1	16	26	245	26	0.2	0.2	.....
2	.....	103	35	.5	.2	.1	17	21	202	16	.2	.2	.....
3	.....	82	35	.5	.2	.1	18	16	125	16	.5	.2	.....
4	.....	64	29	.5	.2	.....	19	12	103	16	.2	.1	.....
5	.....	64	23	.5	.2	.....	20	9	82	16	.5	.1	.....
6	.....	64	20	.5	.2	.....	21	12	82	12	.5	.1	.....
7	.....	56	16	1.5	.2	.....	22	46	64	15	.5	.1	.....
8	.....	42	145	1.5	.2	.....	23	100	64	15	.5	.1	.....
9	.....	42	195	1.5	.2	.....	24	21	48	15	.2	.1	.....
10	285	73	95	.5	.2	.....	25	16	48	15	.2	.1	.....
11	100	202	55	.5	.2	.....	26	62	42	14	.2	.1	.....
12	6	307	55	.5	.2	.....	27	146	35	13	.2	.1	.....
13	184	260	38	.5	.2	.....	28	62	35	8	.2	.1	.....
14	146	245	38	.5	.2	.....	29	46	35	7	1.0	.1	.....
15	46	260	26	.2	.2	.....	30	150	35	6	.5	.1	.....
							31	202	.....	2	.....	.1	.....

Day.	Feb.	Mar.	Apr.	May.	Day.	Feb.	Mar.	Apr.	May.
1912-13.					1912-13.				
1	.....	30	12	0.2	16	.....	12	1.0	.2
2	.....	30	16	.2	17	.....	15	1.0	.2
3	.....	25	16	.2	18	.....	9	1.0	.2
4	.....	15	11	.2	19	.....	3	1.5	.2
5	.....	15	11	.2	20	.....	8	1.0	.2
6	.....	25	11	.2	21	.....	17	1.0	.2
7	.....	20	11	.2	22	.....	25	1.0	.1
8	.....	15	7	.5	23	.....	10	.5	.....
9	.....	15	7	.2	24	.....	24	.5	.....
10	.....	10	10	.2	25	1	36	.5	.....
11	.....	10	7	.2	26	40	42	.5	.....
12	.....	15	7	.2	27	25	23	.5	.....
13	.....	25	1.5	.2	28	40	23	.3	.....
14	.....	35	2.0	.2	29	.....	13	.3	.....
15	0.3	35	1.5	.2	30	.....	13	.3	.....
					31	.....	8	.....	.....

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Daily discharge, in second-feet, of San Diego River at Lakeside, Calif., 1907–1916—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1913–14.							1913–14.						
1	.....	16	54	10	20	1.5	16	.....	0.05	8	2	2.5	.....
2	.....	12	46	10	10	1.5	17	.....	1	7	2	2.5	.....
3	.....	10	38	7	10	1.5	18	.....	1	6	2	2.5	.....
4	.....	10	32	3	10	1.5	19	.....	1	6	1.5	2.5	.....
5	.....	10	32	3	10	1.5	20	.....	545	5	1.5	2.5	.....
6	.....	1	25	3	7	1	21	.....	908	5	1.5	2.5	.....
7	.....	1	23	3	7	1	22	.....	520	4	1.5	2	.....
8	.....	1	21	3	7	1	23	.....	322	3	15	2	.....
9	.....	1	17	3	3	1	24	.....	364	1.5	7	2	.....
10	.....	1	16	2.5	3	1	25	.....	115	1.5	7	2	.....
11	.....	1	14	2.5	3	1	26	.....	92	1.5	7	2	.....
12	.....	1	13	2.5	3	.5	27	908	72	3	3	2	.....
13	.....	1	12	2.5	3	.5	28	392	63	7	3	2	.....
14	.....	1	11	2.5	3	.....	29	95	.....	10	3	2	.....
15	.....	.05	8	2	3	.....	30	37	.....	10	20	1.5	.....
							31	20	.....	10	.....	1.5	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1914–15.								
1	.....	97	234	48	346	67	6	0.1
2	.....	280	270	42	480	66	5	.1
3	.....	905	270	34	505	64	5	.1
4	.....	200	270	32	530	63	4	.1
5	.....	126	234	30	1,290	62	3	.1
6	.....	86	217	28	580	54	2	.....
7	.....	62	217	26	410	43	1	.....
8	.....	50	200	21	410	37	.5	.....
9	.....	36	186	24	388	36	.5	.....
10	.....	252	153	21	270	28	.5	.....
11	.....	1,580	190	24	432	27	.5	.....
12	.....	608	145	21	234	26	.4	.....
13	.....	410	128	18	200	25	.4	.....
14	.....	346	112	18	200	24	.4	.....
15	.....	186	98	18	186	23	.4	.....
16	.....	171	85	37	143	17	.4	.....
17	.....	234	73	24	143	16	.4	.....
18	.....	200	71	24	234	15	.3	.....
19	.....	131	71	18	215	11	.3	.....
20	.....	143	62	13	180	14	.3	.....
21	.....	270	62	18	150	13	.3	.....
22	.....	200	53	288	135	12	.3	.....
23	.....	143	46	432	134	12	.3	.....
24	.....	131	46	186	108	11	.2	.....
25	.....	143	53	200	118	10	.2	.....
26	.....	217	46	186	117	10	.2	.....
27	.....	143	46	131	104	9	.2	.....
28	.....	119	44	157	91	8	.2	.....
29	160	.....	58	157	80	8	.2	.....
30	900	.....	57	252	78	7	.1	.....
31	270	.....	48	.....	77	.....	.1	.....

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Daily discharge, in second-feet, of San Diego River at Lakeside, Calif., 1907–1916—Con.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1915–16.							
1	1,530	425	155	54	21	2.5	0.5
2	695	265	155	51	20	2.5	.5
3	570	280	150	49	19	2.5	.....
4	495	280	150	46	18	2.5	.....
5	360	332	140	44	16	2.5	.....
6	332	305	135	41	15	2.5	.....
7	332	210	130	39	14	2.5	.....
8	392	232	120	38	13	2.5	.....
9	255	232	120	36	11	2	.....
10	202	190	120	36	10	2	.....
11	210	190	120	36	9	2	.....
12	210	178	120	43	8.5	2	.....
13	280	202	125	43	8	2	.....
14	255	190	110	35	7	2	.....
15	316	178	98	31	7	2	.....
16	255	192	85	34	7	2	.....
17	265	178	77	28	6	1.8	.....
18	305	138	74	26	6	1.5	.....
19	332	135	70	26	6	1.5	.....
20	316	265	67	31	5	1.5	.....
21	532	397	64	31	5	1.5	.....
22	332	390	64	31	5	1	.....
23	219	430	65	31	4	1	.....
24	202	350	65	34	4	1	.....
25	202	340	66	34	4	1	.....
26	232	380	66	31	3	1	.....
27	332	325	64	31	3	.5	.....
28	255	270	61	26	3	.5	.....
29	265	220	59	25	3	.5	.....
30	.....	170	56	24	3	.5	.....
31	.....	155	.....	23	.....	.5	.....

NOTE.—No flow on days for which discharge is not given. Daily discharge determined as follows:

1907–8: Jan. 1 to Dec. 31, 1908, by shifting-control method.

1909: Jan. 1 to Aug. 8, and Dec. 5 to 31, 1909, estimated from gage heights, precipitation records, and local conditions.

1910: Jan. 1 to Feb. 12, from rating curve fairly well defined between 30 and 180 second-feet; Feb. 13 to Mar. 11, by shifting-control method; Mar. 12 to Apr. 16, from rating curve fairly well defined between 16 and 80 second-feet; Apr. 17 to 24, shifting-control method; Apr. 25 to July 8, from fairly well-defined rating curve.

1911: Jan. 26 to May 10, by shifting-control method; May 11 to June 30, estimated.

1912: Mar. 10 to Aug. 3, shifting-control method.

1913: Feb. 25, to June 15, shifting-control method.

1914: Jan. 27 to 30, Feb. 6 to Mar. 6, from fairly well-defined rating curves. Jan. 31 to Feb. 5, 1914, gage-height record in error; discharge estimated from discharge measurements. Mar. 7 to June 13, from poorly defined rating curve.

1915: Jan. 29 to Aug. 5, by shifting-control method and from fairly well-defined rating curves covering short periods.

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Monthly discharge of San Diego River at Lakeside, Calif., for 1906–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906.				
January	212	0.6	16.7	1,030
February	252	1.4	43.6	2,420
March	3,800	15	683	42,000
April	890	105	277	16,500
May	170	39	65.7	4,040
June	51	2.8	15.1	898
July	2.8	.8	1.2	74
August	.8	.4	.6	37
September	.3	.0	.1	6
The period				67,000
1906–7.				
December	152	0	11	676
January	1,050	27	183	11,300
February	260	32	87.6	4,870
March	940	60	242	14,900
April	320	68	157	9,340
May	83	23	45.4	2,790
June	23	.6	15	893
July	.6	.2	.44	27
The year			61.8	44,800
1907–8.				
November	.5	.1	.2	12
December	1	.3	.6	37
January	100	1	15.5	953
February	300	14	76	4,370
March	130	12	44	2,700
April	30	4	11.6	690
May	25	.5	5	307
June	.5	.2	.4	24
July	.2	0	.1	6
The year			12.4	9,100
1908–9.				
December	.2	.0	.08	5
January	2,550	.2	148	9,100
February	1,310	45	281	15,600
March	390	50	122	7,500
April	135	33	74.5	4,430
May	31	9	18.2	1,120
June	9	5	7.17	427
July	5	1	3.19	196
August	260	.0	16.6	1,020
The year	2,550	.0	54.5	39,400
1909–10.				
December	225	.0	23.5	1,440
January	462	50	156	9,590
February	124	27	49.5	2,750
March	194	12	41.4	2,550
April	80	1	31.7	1,890
May	5	.6	1.68	103
June	.6	.1	.38	23
July	.6	.0	.12	7
The year	462	.0	25.4	18,400
1910–11.				
January	32	.0	3.5	215
February	655	2	84.1	4,670
March	290	15	75.3	4,630
April	88	5	24.2	1,440
May	9	.2	.98	60
June	.2	.2	.20	12
The year	655	.0	15.2	11,000
1911–12.				
March	285	.0	55.3	3,400
April	307	35	109	6,490
May	195	2	33.7	2,070
June	2	.2	.58	34
July	.2	.1	.16	10
August	.1	.0	.01	1
The year	307	.0	16.5	12,000
1912–13.				
February	40	.0	3.80	211
March	42	3	19.4	1,190
April	16	.3	5.48	326
May	.2	.0	.15	9
The year	42	.0	2.40	1,740
1913–14.				
January	908	.0	46.8	2,880
February	908	.05	110	6,110
March	54	1.5	14.5	892
April	20	1.5	4.55	271
May	20	1.5	4.39	270
June	1.5	.0	.48	29
The year	908	.0	14.4	10,500
1914–15.				
January	900	.0	42.9	2,640
February	1,580	36	270	15,000
March	270	44	124	7,620
April	432	13	84.6	5,030
May	1,290	77	276	17,000
June	67	7	27.3	1,620
July	6	.1	1.08	66
August	.1	.0	.02	1
The year	1,580	.0	67.6	49,000
1915–16.				
January		.0	2,420	149,000
February	1,530	202	361	20,800
March	430	135	259	15,900
April	155	56	98.4	5,860
May	54	23	35.0	2,150
June	21	3	8.78	522
July	2.5	.5	1.65	101
August	.5	.0	.032	2
The year		.0	267	194,000

NOTE.—Discharge for January, 1916, estimated from study of mean rainfall computed for drainage area compared with record of flow on San Diego River at diverting dam and at San Diego. No flow in months for which record is not given.

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Combined daily discharge, in second-feet, of San Diego River and flume near Lakeside, Calif., for 1907–1916.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1	.....	.....	.....	92	261	74	229	94	39	9.3	9.5	10
2	.....	.....	.....	110	143	78	261	74	36	9.6	8.7	8.2
3	.....	.....	.....	52	106	62	326	73	34	11	8.2	6.8
4	.....	.....	.....	37	106	71	265	73	33	11.5	7.5	7.5
5	.....	.....	.....	35	96	534	267	88	30	11	7.5	10
6	.....	.....	.....	152	96	314	266	84	30	11	7.7	9.5
7	.....	.....	.....	129	84	322	231	104	30	11.5	7.2	9.2
8	.....	.....	.....	93	76	332	202	82	43	11.5	7.0	8.0
9	.....	.....	.....	88	76	266	206	66	32	11	6.3	8.2
10	.....	.....	.....	234	76	210	178	65	31	10	7.0	9.7
11	.....	.....	.....	477	62	189	178	67	32	9.9	8.4	9.7
12	.....	.....	.....	149	46	218	180	67	32	8.8	8.7	10
13	.....	.....	.....	88	44	213	156	66	35	8.6	9.7	10
14	.....	.....	.....	128	50	154	132	62	39	8.6	9.5	10.5
15	.....	.....	.....	173	37	150	135	48	21	10	9.5	10.5
16	.....	.....	.....	148	48	173	152	47	20	11	14	9.7
17	.....	.....	.....	149	246	143	151	45	21	11	10	10
18	.....	.....	.....	1,050	129	118	133	37	17	10.5	9.7	10
19	.....	.....	.....	421	106	125	114	38	16.5	9.2	9.7	10.5
20	.....	.....	.....	305	79	114	114	38	16	10	10	10.5
21	.....	.....	.....	306	77	294	114	37	17	10.5	10.5	9.2
22	.....	.....	.....	283	74	284	118	38	18	10	9.5	5.7
23	.....	.....	.....	219	70	240	102	40	17.5	9.9	8.2	6.1
24	.....	.....	.....	145	60	205	102	44	17.5	10	7.7	10
25	.....	.....	.....	143	51	172	121	45	16.5	10	7.5	10
26	.....	.....	.....	106	83	943	99	44	13	10.5	8.0	10
27	.....	.....	.....	97	84	598	117	42	13	10.5	9.5	9.7
28	.....	.....	.....	97	68	349	79	40	11.5	11	9.7	10
29	.....	.....	.....	101	.....	239	94	40	10.5	9.9	9.5	8.7
30	.....	.....	.....	146	.....	203	114	39	9.3	9.6	10	9.2
31	.....	.....	.....	96	.....	226	.....	39	.....	9.8	10.5	.....
1907–8.												
1	8.4	4.5	6.2	5.5	26	75	29	15	8.5	7.7	8.7	7.7
2	8.4	3.6	2.6	5.3	25	45	28	16.5	7.1	7.9	8.7	6.8
3	9.2	4.5	4.6	4.9	111	43	23	18.5	7.1	7.9	9.2	7.2
4	8.4	4.3	2.9	4.9	306	53	25	37	6.8	7.4	8.2	8.2
5	8.0	4.1	6.6	4.9	117	134	24	27	6.6	6.8	7.2	7.7
6	7.7	3.2	2.7	4.7	51	117	24	25	6.7	7.0	7.7	6.3
7	8.2	3.9	7.7	3.4	49	80	22	23	6.3	7.0	6.1	5.9
8	7.5	4.6	7.5	3.2	30	64	22	20	6.3	7.4	6.8	6.1
9	6.3	4.6	2.2	3.3	37	63	20	18.5	6.3	8.2	7.7	7.2
10	6.8	2.8	.9	3.3	211	50	17.5	17.5	6.3	8.4	7.7	7.7
11	6.8	4.9	1.4	4.9	161	37	15.5	16.5	7.4	8.6	4.1	6.3
12	6.6	4.6	2.0	5.3	146	38	16	17	8.6	8.2	1.8	6.3
13	6.1	4.0	1.1	6.9	187	38	16	16.5	8.1	8.2	3.0	5.0
14	6.3	2.1	1.2	6.9	114	30	16	16	7.0	8.4	7.5	6.1
15	9.2	.3	4.1	18.5	86	30	14.5	15.5	6.7	8.4	7.7	7.2
16	8.4	1.0	.9	29	85	30	14.5	12.5	7.1	8.6	5.7	8.2
17	7.0	2.0	.7	30	88	30	14.5	12.5	7.3	8.9	6.8	8.4
18	5.5	.7	.6	7.8	48	30	15.5	10.5	7.8	7.8	7.2	8.4
19	5.3	1.5	1.0	6.5	46	30	14.5	9.5	7.8	7.1	7.5	8.7
20	5.7	.3	2.8	6.5	50	31	13.5	8.1	7.8	6.0	8.0	7.0
21	3.7	.3	2.7	8.0	50	30	14.5	8.5	7.3	6.0	7.7	6.8
22	5.0	.3	4.6	8.5	50	22	19.5	7.6	7.3	8.1	7.7	6.3
23	7.0	.6	2.2	11	66	21	39	7.8	7.5	8.3	7.5	8.4
24	5.7	6.4	2.7	33	54	16	40	6.7	7.1	7.8	7.2	9.7
25	6.3	7.1	4.6	41	54	18.5	32	6.9	7.3	8.1	7.5	6.3
26	6.8	7.1	1.0	77	44	65	25	8.2	7.2	4.3	8.2	9.2
27	6.1	7.3	2.5	41	34	98	24	8.9	7.7	6.8	8.0	9.2
28	6.3	2.5	4.6	65	31	64	18.5	8.9	7.9	7.2	8.0	9.2
29	6.6	4.6	6.9	110	38	39	15	8.2	7.9	7.0	8.0	8.7
30	2.9	3.0	10	73	.....	30	15	8.2	7.7	7.2	8.0	8.0
31	3.2	.....	3.9	46	.....	30	.....	8.5	.....	8.4	8.2	.....

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Combined daily discharge, in second-feet, of San Diego River and flume near Lakeside, Calif., for 1907–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908-9.												
1	7.0	5.9	5.3	6	63	135	139	43	19	10	6	8
2	8.0	5.5	4.6	6	50	125	124	42	17	10	8	9
3	8.0	4.8	2.7	5	58	105	107	41	17	11	268	7
4	7.5	5.0	.3	3	239	111	90	40	16	12	133	5
5	7.2	5.5	1.9	2	148	106	109	39	11	12	133	6
6	6.8	5.3	1.5	2	113	105	129	38	9	11	10	7
7	6.3	4.6	2.9	2	113	105	105	38	16	12	7	9
8	6.1	4.3	5.5	2	1,320	100	104	37	17	12	7	11
9	5.9	4.5	5.5	3	229	75	104	36	16	11	7	9
10	7.7	4.8	4.6	6	172	72	104	35	16	11	8	8
11	6.8	6.1	4.3	6	288	76	105	34	16	12	8	8
12	6.8	6.1	3.2	6	289	75	106	33	15	12	8	8
13	7.5	5.9	2.6	4	815	55	100	33	13	12	7	8
14	7.5	5.7	2.7	10	395	53	93	32	16	11	10	8
15	7.5	5.7	2.7	16	268	53	89	32	17	4	0	7
16	8.0	5.7	2.6	16	241	51	85	30	18	10	0	7
17	7.7	5.5	3.7	16	218	56	78	29	17	10	0	7
18	6.6	5.9	3.7	14	172	57	74	29	18	10	0	7
19	4.6	6.3	2.8	11	156	55	71	28	18	10	7	7
20	5.3	5.9	2.1	9	150	62	66	28	16	10	8	6
21	6.8	4.8	1.9	9	858	60	63	27	14	10	9	6
22	6.6	4.8	1.7	2,550	320	185	58	26	13	9	9	8
23	6.1	5.3	1.6	850	290	164	55	24	12	11	9	8
24	6.3	5.5	1.6	204	240	181	54	24	12	13	10	8
25	5.7	2.6	1.4	169	220	153	51	22	12	11	10	8
26	5.7	2.7	1.0	171	203	108	50	22	12	10	10	8
27	6.1	5.3	1.0	131	200	365	49	21	12	10	9	6
28	6.3	5.5	1.1	211	156	394	49	22	13	10	9	6
29	7.0	5.7	2.1	179	.....	267	47	22	13	9	7	6
30	7.2	5.5	2.4	109	.....	192	46	21	11	8	8	6
31	7.0	.....	3.8	69	.....	151	.....	20	.....	7	7	.....
1909-10.												
1	6	5	3	398	65	46	76	16	9	9	6.7	8.5
2	6	5	2	466	86	39	67	16	10	9	7.8	9.7
3	6	6	2	358	70	30	79	15	10	9	8.5	10.7
4	6	6	3	275	56	29	56	14	10	9	8.5	9.5
5	6	5	4	219	37	29	54	16	10	8	7.6	9.7
6	6	6	8	164	60	25	49	14	10	10	8.3	4.8
7	6	7	9	149	50	30	57	14	10	9	8.0	1.3
8	6	7	8	149	56	32	54	13	9	8	7.6	8.5
9	6	7	6	120	56	32	40	12	9	7.4	7.8	9.0
10	6	6	230	159	56	28	33	11	7	6.4	8.3	10.2
11	6	4	38	143	44	27	34	11	6	7.1	7.8	7.8
12	6	4	15	160	44	36	54	10	6	7.6	8.0	8.0
13	6	2	13	124	38	25	83	10	8	7.8	8.7	9.2
14	7	1	13	106	32	14	59	10	9	8.5	7.8	9.7
15	7	5	12	107	30	14	52	11	9	8.3	8.0	8.0
16	6	3	10	242	37	29	40	11	9	8.3	8.5	8.5
17	6	3	9	359	28	23	36	9	9	7.6	8.7	8.0
18	6	2	10	180	36	25	28	9	8	7.1	8.7	8.3
19	6	1	9	141	44	24	34	9	8	7.6	9.0	8.0
20	6	1	12	123	50	27	34	9	8	7.8	8.3	8.3
21	6	4	84	105	125	24	28	10	8	7.6	7.8	10.4
22	5	6	101	89	56	29	24	10	9	7.8	8.3	10.2
23	4	6	61	73	49	31	23	9	9	8.0	8.0	9.5
24	3	5	96	64	46	30	16	8	9	7.4	5.3	9.2
25	4	4	46	61	46	27	15	8	9	8.0	6.7	8.0
26	6	6	30	80	55	51	17	9	9	8.7	6.9	8.3
27	8	6	30	70	42	58	14	9	9	8.5	6.9	9.0
28	8	7	30	62	40	126	14	9	9	7.1	5.4	8.7
29	6	6	25	72	.....	196	14	9	8	6.4	5.4	8.0
30	5	5	26	58	.....	176	9	9	8	6.0	7.1	8.0
31	5	.....	25	50	.....	110	.....	10	.....	6.4	8.3	.....

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Combined daily discharge, in second-feet, of San Diego River and flume near Lakeside, Calif., for 1907–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	9.0	5.8	4.2	2.5	13	87	27	20	6.4	0	7.8	6.4
2	9.0	6.0	4.0	2.7	15	64	96	20	5.8	0	8.3	6.7
3	10.2	5.8	4.8	2.5	26	41	56	15	3.4	.9	7.8	6.4
4	10.9	6.0	6.4	4.6	260	292	36	12	8.2	7.1	7.1	6.4
5	8.7	4.8	7.8	5.2	380	170	41	12	8.2	7.6	7.4	6.4
6	7.6	2.2	6.7	5.4	134	116	40	9.8	5.6	8.0	7.1	6.0
7	7.8	4.6	5.6	5.6	106	82	67	11	3.6	7.1	7.4	5.6
8	8.7	6.9	3.3	5.6	56	122	93	11	3.0	1.0	2.4	5.4
9	10.2	7.6	6.2	6.4	45	121	67	9.8	2.9	0	0	3.2
10	9.9	6.9	5.6	6.4	31	144	54	9.2	1.4	0	0	2.5
11	12.0	7.4	5.2	6.2	26	180	44	8.7	2.9	0	0	1.0
12	9.5	7.1	4.6	8.3	26	136	34	8.7	1.2	0	0	2.1
13	9.7	5.8	5.0	8.7	47	107	16	8.0	1.5	0	.9	2.2
14	9.7	5.6	4.8	7.8	206	76	16	7.8	4.1	7.4	6.7	2.7
15	8.3	3.0	4.8	7.6	127	73	29	8.7	5.8	8.5	7.4	3.4
16	2.7	.6	5.0	9.5	108	72	29	9.7	6.6	7.4	7.8	3.9
17	0	.4	5.4	9.5	74	67	26	8.2	7.8	5.0	8.5	3.9
18	.9	2.8	5.4	8.7	61	60	27	7.3	7.6	4.8	9.0	3.5
19	5.4	4.8	5.8	6.9	51	53	25	7.1	1.2	4.6	8.5	3.2
20	5.4	5.4	7.8	5.4	48	47	24	5.8	.2	5.8	7.6	2.5
21	7.6	5.2	5.8	4.4	34	47	20	4.6	.2	7.6	5.6	1.3
22	8.5	5.2	2.3	3.9	29	48	23	2.7	.2	8.5	3.0	1.5
23	5.0	4.4	1.8	3.2	30	47	26	4.6	3.0	1.7	1.2	2.0
24	4.2	3.2	3.9	4.2	28	40	22	8.2	7.6	0	1.3	2.4
25	6.9	3.0	5.2	6.7	32	39	20	8.7	7.8	0	1.8	0
26	7.4	5.0	5.8	40	38	34	18	9.2	8.2	0	3.2	.3
27	6.7	5.8	4.6	32	31	28	23	9.7	8.5	0	6.7	.1
28	5.8	4.6	4.2	22	59	30	19	9.7	2.0	0	7.1	0
29	6.2	4.6	4.6	24	.....	27	21	7.8	.2	1.0	6.9	.3
30	5.6	4.4	4.8	22	.....	26	20	6.0	.2	6.2	5.8	.1
31	6.0	.....	3.2	24	.....	28	.....	6.2	.....	7.4	6.7	.....
1911–12.												
1	0.0	0.0	0.0	0.6	1.0	2.0	164	40	16.2	8.9	5.7	2.7
2	.0	.0	.0	.2	1.0	5.0	117	40	13.6	7.8	4.7	3.9
3	.0	.0	.0	.2	1.0	5.8	96	42	12.5	7.6	7.7	4.4
4	.1	.0	.0	.0	1.0	6.4	77	43	11.4	8.0	8.0	4.2
5	.0	.0	.0	.0	1.0	9.0	78	36	11.2	7.8	8.5	3.0
6	.1	.0	.0	.2	.9	9.7	78	35	11.2	6.6	8.7	2.5
7	.0	.0	.0	.0	.9	8.0	70	29	11.7	8.5	8.0	2.1
8	.0	.0	.0	.0	1.0	5.4	58	157	11.0	10.4	8.3	2.2
9	2.2	.0	.0	.0	1.0	6.4	57	206	10.5	6.6	3.9	2.2
10	.0	.0	.0	1.5	1.1	289	88	106	10.2	7.8	8.0	3.2
11	.0	.0	.0	.0	1.1	111	216	61	10.0	7.8	8.7	2.1
12	.0	.0	.0	.6	1.0	17.7	319	61	9.5	8.2	8.5	1.6
13	.0	.0	.0	1.0	1.0	195	268	43	8.5	8.7	4.6	2.0
14	.0	.0	.0	.0	1.0	160	254	46	9.0	8.7	4.0	2.7
15	.0	.0	.0	3.0	1.0	60	270	36	8.7	8.5	5.8	2.1
16	.0	.0	.0	.1	.9	40	258	33	7.8	7.3	7.1	2.5
17	.0	.0	.0	.4	.9	33	214	28	6.6	7.6	6.7	2.8
18	.0	.0	.0	2.7	.9	30	137	31	4.4	6.9	7.4	3.2
19	.0	.0	.0	1.5	.9	26	116	31	5.8	7.5	7.6	2.8
20	.0	.0	.0	.8	1.3	23	95	31	7.6	8.6	7.6	2.5
21	.0	.0	.0	.8	1.8	25	95	28	8.5	7.7	5.2	2.2
22	.0	.0	.0	.8	1.5	60	72	30	10.9	8.1	4.2	2.2
23	.0	.0	.0	.6	1.1	113	72	30	11.2	7.9	2.0	3.2
24	.0	.0	.0	.3	1.3	32	62	28	11.4	8.6	1.5	2.7
25	.0	.0	.0	1.1	1.1	28	62	29	10.6	7.9	8.0	2.7
26	.0	.0	.0	1.0	1.0	74	57	28	9.2	6.3	7.8	2.7
27	.0	.0	.0	1.1	1.1	158	50	27	9.2	5.7	1.1	2.8
28	.0	.0	.0	1.7	1.0	75	49	22	9.7	7.0	.0	2.7
29	.0	.0	.7	1.5	1.0	60	50	21	11.2	8.1	.0	2.5
30	.0	.0	3.0	1.6	.....	165	50	21	12.2	8.1	.4	2.5
31	.0	.....	.4	1.0	.....	215	.....	16.4	.....	6.8	2.2	.....

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Combined daily discharge, in second-feet, of San Diego River and flume near Lakeside, Calif., for 1907–1916.—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	1.4	2.6	2.1	2.8	2.8	38	20	7.7	3.3	5.8	3.5	2.8
2	2.1	2.5	1.6	2.3	2.5	38	24	7.3	4.8	5.4	3.3	2.0
3	2.1	2.6	1.6	2.0	2.3	32	26	4.2	3.5	5.4	2.8	1.4
4	2.3	2.0	2.3	2.0	2.1	21	21	3.8	4.4	4.2	2.5	2.5
5	8.7	2.1	2.8	1.7	5.0	22	21	4.6	4.0	5.8	2.6	1.3
6	10	3.1	2.5	.0	2.6	34	25	4.2	3.5	3.5	2.8	.7
7	11	3.3	2.8	.0	3.6	29	20	4.2	3.1	3.6	2.1	2.1
8	8.7	2.5	2.3	.1	4.0	25	16	4.1	3.0	4.4	1.8	2.8
9	5.6	2.8	2.0	.2	4.2	24	16	3.7	2.8	5.4	2.5	3.0
10	3.1	3.0	1.8	.2	4.6	19	19	4.2	4.0	5.4	2.1	1.8
11	1.2	3.0	1.8	.2	5.8	20	15	4.4	3.6	5.2	2.3	.8
12	.2	3.1	2.0	6.9	5.6	24	23	4.6	4.2	5.8	2.5	2.1
13	2.0	2.6	2.3	6.6	5.6	33	11	4.6	5.0	6.0	2.1	2.5
14	2.0	2.6	2.1	6.0	6.0	45	13	4.8	5.0	5.8	2.1	2.3
15	4.2	2.5	2.3	4.2	5.9	45	14	4.6	5.6	5.8	2.0	2.5
16	2.5	2.5	2.1	4.8	4.8	14	12	4.2	6.0	6.0	2.3	2.1
17	4.2	3.0	2.3	7.3	3.5	25	13	2.8	6.0	6.6	2.3	1.8
18	3.6	2.5	2.5	7.5	3.5	21	14	2.8	5.6	6.4	2.3	1.4
19	3.3	2.1	2.3	7.5	3.5	16	14	2.2	3.6	6.2	2.8	2.0
20	4.2	2.1	2.5	6.9	3.3	22	14	2.2	3.5	6.4	3.0	2.0
21	4.0	2.1	2.1	7.1	3.5	28	14	2.2	4.0	5.2	3.5	2.0
22	4.2	2.0	2.3	5.4	4.4	34	14	1.9	5.4	4.4	3.1	1.6
23	4.0	2.0	3.0	7.1	7.7	20	10	2.0	7.1	4.0	2.6	2.1
24	3.6	2.0	2.8	6.4	7.1	35	8.0	2.0	6.4	3.5	2.5	1.8
25	4.0	2.8	3.1	6.2	9.7	45	10	2.1	6.2	3.3	2.5	2.0
26	4.2	2.6	.7	4.6	48	52	8.2	2.8	6.4	2.6	2.1	1.6
27	2.3	2.1	2.8	4.0	34	33	8.2	2.6	6.0	2.6	2.5	1.6
28	2.5	2.0	2.5	3.3	48	34	6.7	2.8	7.3	2.8	3.1	1.4
29	2.3	2.0	2.3	4.0	.....	24	5.5	3.1	6.6	4.0	2.8	1.4
30	2.1	2.1	2.3	3.0	.....	24	7.2	2.8	5.8	3.6	3.3	1.3
31	2.5	.....	3.0	2.8	.....	19	.....	2.6	.....	3.8	3.6	.....
1913–14.												
1	2.0	.....	.....	.....	18	69	26	36	7.7	.0	5.0	5.2
2	1.8	.....	.....	.....	13	62	27	27	7.7	.0	4.8	5.4
3	.4	.....	.....	.....	11	54	22	27	7.7	.0	3.8	5.2
4	.7	.....	.....	.....	11	48	19	27	7.3	.0	3.8	5.2
5	.8	.....	.....	.....	13	48	19	26	7.1	.0	5.8	4.8
6	.7	.....	.....	.....	8.7	41	20	22	6.6	.0	4.6	4.8
7	.9	.....	.....	.....	11	39	19	21	6.6	.0	5.0	4.8
8	.7	.....	.....	.....	12	37	20	19	6.8	.0	5.8	4.8
9	.2	.....	.....	.....	12	33	18	15	8.5	.0	5.0	4.8
10	.2	.....	.....	.....	12	32	18	19	9.1	4.8	4.0	3.3
11	1.4	.....	.....	.....	13	30	18	17	7.8	2.4	4.4	3.8
12	.7	.....	.....	.....	14	29	18	16	4.0	3.5	3.3	4.0
13	.4	.....	.....	.....	13	28	18	16	5.5	6.0	3.8	3.5
14	.5	.....	.....	.....	13	28	16	15	5.0	6.0	4.4	3.3
15	.7	.....	.....	.....	13	25	15	15	4.2	3.7	5.0	3.5
16	1.0	.....	.....	.....	10	25	15	14	4.2	6.8	5.0	3.8
17	1.0	.....	.....	.....	12	24	14	14	2.8	6.2	5.0	3.8
18	1.4	.....	.....	.....	12	23	14	15	.8	5.2	5.0	3.7
19	1.0	.....	.....	.....	12	23	12	14	.5	5.2	3.7	3.5
20	.9	.....	.....	.....	551	22	8.1	12	.0	5.4	4.4	3.5
21	1.6	.....	.....	.....	922	22	10	12	.0	5.2	5.0	3.2
22	.5	.....	.....	.....	533	21	14	10	.0	5.0	5.0	3.2
23	.0	.....	.....	.....	332	20	29	11	.0	6.0	5.0	3.3
24	.0	.....	.....	.....	378	19	24	10	.0	4.8	4.0	3.5
25	.0	.....	.....	.....	128	19	25	10	.0	5.0	4.2	3.5
26	.0	.....	.....	.1	107	19	24	11	.0	4.8	4.6	3.3
27	.0	.....	.....	908	87	20	22	11	.0	4.8	4.8	3.2
28	.0	.....	.....	392	78	25	21	10	.0	4.6	4.8	2.8
29	.0	.....	.....	96	.....	28	21	9.7	.0	5.0	5.0	2.8
30	.2	.....	.....	41	.....	25	36	8.5	.0	5.0	3.8	3.0
31	.0	.....	.....	22	.....	25	.....	8.1	.....	5.0	4.4	.....

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Combined daily discharge, in second-feet, of San Diego River and flume near Lakeside, Calif., for 1907–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	3.3	2.8	.....	3.3	116	252	66	356	76	19	10	1.4
2	3.5	3.0	.....	3.9	300	288	60	490	75	18.5	8.1	10
3	3.8	2.8	.....	2.3	911	288	52	515	73	14.5	8.1	7.5
4	6.3	3.5	.....	2.5	295	288	50	540	74	12.5	9.9	8.5
5	2.5	4.8	.....	3.0	142	252	48	1,300	75	11	9.3	9.0
6	2.5	3.8	.....	3.2	98	236	46	587	66	11	8.2	7.2
7	2.8	3.8	.....	3.0	78	236	44	420	57	9.5	8.0	11
8	2.5	3.8	.....	2.8	71	218	42	424	53	12	8.0	8.8
9	1.6	4.6	.....	2.1	57	204	42	408	51	13	8.5	7.2
10	1.8	4.6	.....	2.2	270	171	42	292	43	14.5	10	9.0
11	1.8	3.8	.....	2.0	1,580	207	42	454	43	14	9.8	9.0
12	1.8	5.0	.....	2.2	608	162	42	256	41	13.5	9.2	9.0
13	1.8	2.3	.....	2.1	410	144	38	222	37	9.9	8.8	9.0
14	1.8	1.5	.....	2.2	346	127	38	222	36	11.5	7.2	1.9
15	1.8	1.0	.....	2.3	186	112	40	208	38	11	7.7	1.5
16	2.0	1.3	.....	2.1	171	102	58	165	31	9.9	7.0	1.9
17	2.0	1.5	.....	2.3	234	92	46	162	30	11.5	7.2	1.9
18	2.0	.3	.....	2.3	202	90	46	250	30	8.3	5.5	6.0
19	2.0	.....	.....	2.1	134	90	40	227	25	8.5	6.8	5.1
20	2.0	.....	.....	1.5	160	80	35	188	26	8.8	7.0	5.1
21	2.0	.....	.....	1.6	282	83	38	156	24	8.3	7.2	6.5
22	2.1	.....	.....	3.9	216	73	298	140	24	8.3	6.8	6.5
23	2.2	.....	.....	13	161	65	442	141	25	7.8	6.0	6.2
24	2.0	.....	3.3	16.5	152	64	196	117	24	9.2	4.9	7.0
25	2.0	.....	4.1	16.5	164	72	210	125	23	12	6.5	7.0
26	2.0	.....	4.6	14.5	238	66	201	126	21	10	8.8	7.5
27	1.8	.....	3.3	17	164	64	141	113	19	10	6.0	6.2
28	1.8	.....	3.8	12.5	137	62	166	100	18	10	5.8	3.9
29	1.8	.....	3.8	168	.....	76	165	90	18	10	5.8	4.3
30	1.8	.....	4.1	910	.....	76	264	88	21	9.3	7.0	4.3
31	2.8	.....	3.7	284	.....	66	.....	86	.....	9.9	7.2	.....
1915–16.												
1	6.0	5.1	4.5	.....	1,530	425	160	76	40	18.5	9.5	7.0
2	6.8	6.0	4.9	.....	695	265	167	70	38	15	7.7	4.5
3	7.0	6.0	7.2	.....	570	280	162	70	38	13.5	7.2	3.9
4	7.0	6.0	7.8	.....	495	280	163	68	38	14	8.0	4.9
5	7.0	6.0	8.8	.....	360	332	154	67	36	15	6.8	7.8
6	7.2	7.5	7.2	.....	332	305	149	65	33	12	6.5	7.5
7	7.2	8.5	6.5	.....	332	210	144	63	29	13.5	6.8	5.1
8	7.2	4.5	6.5	.....	392	232	134	60	32	14	7.0	5.3
9	7.0	3.0	6.0	.....	255	232	134	59	31	12	7.8	5.8
10	7.5	5.3	10.0	.....	202	190	138	60	31	12	7.0	7.0
11	7.5	3.2	11.5	.....	210	190	141	60	30	11.2	6.5	7.5
12	7.0	4.1	9.5	.....	210	178	141	67	28	12	6.2	7.2
13	7.0	3.9	3.2	.....	280	202	144	66	28	12	6.0	7.0
14	7.5	3.4	5.1	.....	255	192	134	58	26	15	7.2	7.0
15	7.5	3.4	5.1	.....	316	182	122	54	20	17	6.5	7.0
16	7.0	3.5	2.6	.....	255	196	108	57	26	19	6.5	6.8
17	6.5	3.4	2.3	.....	265	182	100	49	22	14.3	7.0	7.8
18	7.5	3.4	1.8	.....	305	142	98	49	20	11.5	7.8	8.8
19	3.5	3.5	1.8	.....	332	139	90	48	27	11.5	9.2	9.2
20	5.1	3.5	1.7	.....	316	269	88	54	25	11.5	9.5	14.5
21	3.5	4.9	1.9	.....	532	402	86	54	26	11.5	9.5	13
22	6.0	5.1	2.4	.....	332	395	86	53	28	10	6.8	14
23	6.0	4.9	1.4	.....	219	434	87	53	25	9	6.0	11.5
24	6.0	4.9	1.4	.....	202	352	86	56	22	9	6.5	8.0
25	6.0	4.9	2.9	.....	202	344	87	56	22	9.5	5.3	12
26	6.0	4.7	2.9	.....	232	385	84	53	20	8.5	14.5	12.5
27	6.0	4.7	7.0	.....	332	330	85	52	20	7.3	9.5	12.5
28	6.0	4.7	6.5	.....	255	275	83	46	20	6.5	8.2	11.5
29	5.1	4.7	1.9	.....	265	225	81	45	21	7	7.0	11
30	5.1	4.7	2.8	.....	.....	175	79	44	20	7	6.5	14
31	5.1	.....	1.7	.....	.....	160	.....	42	.....	8	5.8	.....

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Combined monthly discharge of San Diego River and flume near Lakeside, Calif., for 1907–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1907.				
January	1,050	35	188	11,600
February	261	37	90.5	5,030
March	943	62	246	15,100
April	326	79	165	9,820
May	104	37	57.0	3,500
June	43	9.3	24.4	1,450
July	11.5	8.6	10.2	627
August	14	6.3	8.92	548
September	10.5	5.7	9.24	550
The period	.....	.....	.....	48,200
1907–8				
October	9.2	2.9	6.63	408
November	7.3	.3	3.36	200
December	10	.6	3.38	208
January	110	3.2	21.9	1,350
February	306	25	82.6	4,750
March	134	16	47.8	2,940
April	40	13.5	20.9	1,240
May	37	6.7	14.2	873
June	8.6	6.3	7.28	433
July	8.9	4.3	7.58	466
August	9.2	1.8	7.20	443
September	9.7	5.0	7.47	444
The year	306	.3	19.0	13,800
1908–9.				
October	8.0	4.6	6.76	416
November	6.3	2.6	5.22	311
December	5.5	.3	2.74	168
January	2,550	2	155	9,530
February	1,320	50	285	15,800
March	394	51	124	7,620
April	139	46	83.5	4,970
May	43	20	30.6	1,880
June	19	9	14.7	875
July	13	4	10.4	640
August	268	.0	23.6	1,450
September	11	5	7.40	440
The year	2,550	.0	61.0	44,100
1909–10.				
October	8	3	5.87	360
November	7	1	4.70	280
December	230	2	31.3	1,920
January	466	50	159	9,780
February	125	28	51.2	2,840
March	196	14	46.0	2,830
April	83	9	39.8	2,370
May	16	8	10.9	670
June	10	6	8.68	516
July	10	6	7.89	485
August	9	5.4	7.80	480
September	10.7	1.3	8.50	506
The year	466	1	31.8	23,000
1910–11.				
October	12	.0	7.27	447
November	7.6	.4	4.83	287
December	7.8	1.8	4.99	307
January	40	2.5	10.1	621
February	660	13	93.6	5,200
March	292	26	80.8	4,970
April	96	16	35.3	2,100
May	20	2.7	9.26	569
June	8.5	.2	4.18	249
July	8.5	.0	8.47	213
August	9.0	.0	5.19	319
September	6.7	.0	3.05	181
The year	660	.0	21.8	15,500
1911–12.				
October	2.2	0.0	0.08	5
November	.0	.0	.00	0
December	3.0	.0	.13	8
January	3.0	.0	.78	48
February	1.8	.9	1.06	61
March	289	2.0	66.0	4,060
April	319	49	122	7,260
May	206	16.4	45.7	2,810
June	16.2	4.4	10.0	595
July	10.4	5.7	7.81	480
August	8.7	.0	5.55	341
September	4.4	1.6	2.73	162
The year	319	.0	21.8	15,800
1912–13.				
October	11	.2	3.81	234
November	3.3	2.0	2.47	147
December	3.1	.7	2.29	141
January	7.5	.0	3.97	244
February	48	2.1	8.70	483
March	52	14	28.9	1,780
April	26	5.5	14.8	881
May	7.7	1.9	3.62	223
June	7.3	2.8	4.86	289
July	6.6	2.6	4.80	295
August	3.6	1.8	2.62	161
September	3.0	.7	1.89	112
The year	52	.0	6.88	4,990
1913–14.				
October	2.0	.0	.64	39
November	.0	.0	.0	0
December	.0	.0	.0	0
January	908	.0	47.1	2,900
February	922	8.7	120	6,660
March	69	19	31.1	1,910
April	36	8.1	19.4	1,150
May	36	8.1	16.1	990
June	9.1	.0	3.66	218
July	6.8	.0	3.56	219
August	5.8	3.3	4.59	282
September	5.4	2.8	3.88	231
The year	922	.0	20.1	14,600
1914–15.				
October	6.3	1.6	2.32	143
November	5.0	.0	1.81	108
December	4.6	.0	.99	61
January	910	1.5	48.6	2,990
February	1,580	57	282	15,700
March	288	62	142	8,730
April	442	35	101	6,010
May	1,500	86	289	17,800
June	76	18	39.9	2,370
July	19	7.8	11.2	689
August	10	4.9	7.62	469
September	11	1.4	6.31	375
The year	1,580	.0	76.5	55,400
1915–16.				
October	7.5	3.5	6.35	390
November	8.5	3.0	4.71	286
December	11.5	1.4	4.74	291
January	.....	.....	2,420	149,000
February	1,530	202	361	20,800
March	434	139	261	16,000
April	167	79	117	6,960
May	76	42	57.2	3,520
June	40	20	27.4	1,630
July	18.5	6.5	11.9	732
August	14.5	5.3	7.49	461
September	14.5	3.9	8.72	519
The year	.....	.....	276	201,000

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SAN DIEGO RIVER NEAR SANTEE, CALIF.

LOCATION.—In tract T, El Cajon grant, at old Mission dam, below Spring Canyon and just above Oak Canyon, about 4½ miles west of Santee, San Diego County.

DRAINAGE AREA.—375 square miles (measured on topographic maps).

ELEVATION.—About 275 feet above sea level.

RECORDS AVAILABLE.—May 25, 1912, to September 30, 1918 (record not complete).

GAGE.—Staff in two sections installed December 12, 1916; lower section bolted to upstream face of old dam near left end; upper section fastened to large sycamore tree on left bank just above dam. Original gage was at same datum and at practically same site except that low-water section was at right of break in dam. Gage datum 266.42 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable about 500 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand; shifting. The old dam serves as part control. May 10, 1913, a concrete weir, having steel plates for crest and sides, was installed at old break in dam. This weir was partly destroyed by drift February 2, 1915. The flood of January, 1916, wrecked weir and caused some change in control near left bank. (See Pl. XVIII, *A*, p. 493.)

EXTREMES OF DISCHARGE.—1912–1918: Maximum stage recorded, 25.1 feet January 27, 1916 (discharge, 70,200 second-feet); no flow for several months each year, except for a small quantity of ground water that rises to surface at dam.

DIVERSIONS.—See San Diego River at Lakeside. Water for irrigation is pumped from wells along the river below Lakeside.

REGULATION.—None except as noted for station at Lakeside. (See p. 65.)

ACCURACY.—Stage-discharge relation fairly permanent. There have been minor changes in control but all are covered by rating curves fairly well defined except for flood stages. Gage usually read to half-tenths once daily. Daily discharge ascertained by applying gage height to rating table. Records good for periods in which gage was read regularly.

COOPERATION.—Gage-height record obtained in cooperation with Charles Sampson, general manager, La Mesa, Lemon Grove & Spring Valley Irrigation District, and Ed. Fletcher, manager, Cuyamaca Water Co.

Discharge measurements of San Diego River near Santee, Calif., for 1912-1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
May 1	F. C. Ebert	7.66	33	Jan. 22	Lee and Sleepy	8.14	17
5	do	7.47	23	Jan. 29	F. C. Ebert	12.26	1,050
11	E. W. Case	8.79	126	30	do	12.86	1,980
25	F. C. Ebert	7.39	14	31	do	11.30	492
June 6	E. A. Bartl	7.15	.2	Feb. 3	K. B. Sleepy	11.85	931
Aug. 17	F. C. Ebert	7.08	*a* .05	8	do	9.20	112
Dec. 16	Taylor and Harriett	7.30	*a* .1	Mar. 4	F. C. Ebert	10.8	430
19	F. C. Ebert	7.31	*a* .3	9	do	9.77	219
				Apr. 1	Ebert and Day	7.85	55
1913.				3	F. C. Ebert	7.83	51
Feb. 15	W. S. Post	7.22	*a* .3	16	R. W. Day	7.37	28
28	E. W. Case	7.79	26	May 18	F. C. Ebert	9.80	219
Mar. 11	do	7.23	5.4	June 21	McClung and Ellis	7.70	14
14	F. C. Ebert	7.63	25	July 7	F. C. Ebert	6.77	*a* .1
17	do	7.40	14	Aug. 1	do	6.30	*a* .05
Apr. 12	do	7.14	.6	Dec. 9	do	7.62	*a* .1
17	H. D. McGlashan	7.07	.2	21	do	7.62	*a* .1
1914.				1916.			
Jan. 27	W. S. Post	12.6	929	Mar. 12	McGlashan and Ebert	8.35	206
28	F. C. Ebert	10.35	271	20	F. C. Ebert	8.42	238
31	do	8.30	23	Apr. 13	do	8.07	155
Feb. 2	do	8.00	9.2	15	do	7.77	122
Mar. 2	do	9.94	69	21	do	7.33	69
6	do	8.63	49	Apr. 26	do	7.28	76
24	do	7.73	2.9	May 8	do	6.77	36
Apr. 19	do	7.61	*a* .1	27	do	6.58	25
May 13	do	7.64	*a* .3	June 12	do	5.78	1.8

a Estimated.

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Discharge measurements of San Diego River near Santee, Calif., for 1912–1918—Contd.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
June 28	F. C. Ebert		0.04	Jan. 4	F. C. Ebert	3.84	0.2
July 16	do		a.02	Feb. 7	D. A. McClung	3.84	.09
Aug. 29	do		a.02	Mar. 6	F. C. Ebert	3.88	.26
Dec. 19	W. J. Isbell	4.93	4.7	9	do	3.85	.2
1917.				11	do	5.35	38
Jan. 22	F. C. Ebert	7.38	175	11	do	10.11	1,070
23	do	6.92	141	11	do	11.10	1,810
Feb. 15	do	5.72	39	12	do	12.85	7,810
19	do	6.95	146	12	do	12.20	4,950
20	do	6.80	126	13	do	10.95	1,750
Mar. 12	do	6.52	105	14	do	8.40	500
29	do	5.78	45	16	do	7.10	191
Apr. 18	McGlashan and Ebert	7.03	149	May 8	do	4.00	1.1
20	do	6.40	85				
May 23	F. C. Ebert	5.24	24				
June 28	D. A. McClung	3.94	.3				
Dec. 23	F. C. Ebert	3.82	.1				

a Estimated.

Daily discharge, in second-feet, of San Diego River near Santee, Calif., for 1912–1918.

Day.	May.	June.	Day.	May.	June.	Day.	May.	June.
1912.			1912.			1912.		
1		1.7	11		0.1	21		
2		5.0	12		.1	22		
3		.9	13		.1	23		
4		.9	14		.1	24		
5		.4	15		.1	25	14	
6		.1	16		.1	26	14	
7		.1	17			27	14	
8		.1	18			28	7.8	
9		.1	19			29	7.8	
10		.1	20			30	7.0	
						31	7.0	

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.
1912–13.						1912–13.					
1		0.3	14	26	28	16	0.1	0.2	0.3	12	0.2
2		.3	5	16	24	17		.2	.3	10	.2
3		.3	5	9	24	18		.2	.3	7	.2
4		.3	4	8	21	19	.3	.2	.2	3	.2
5		.3	5	8	18	20		.2	.2	3	.2
6		.3	7	8	16	21		.2	.2	5	.2
7		.3	5	6	14	22		.2	.1	10	.1
8		.3	5	6	10	23		.2	.1	10	.1
9		.3	2	5	6	24		.2	.1	38	.1
10		.3	.3	5	3	25		.2	.1	38	.1
11		.2	.3	5	1	26		.2	.1	46	.1
12		.2	.2	12	.6	27		.2	.1	38	.1
13		.2	5	18	.6	28		4	26	28	.1
14		.2	7	31	.4	29	.3	5		28	.1
15		.2	12	28	.4	30	.3	12		34	.1
						31	.3	26		31	

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Daily discharge, in second-feet, of San Diego River near Santee, Calif., for 1912–1918—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1913–14.						**1913–14.**					
1	0.1	18	77	15	.....	16	0.1	0.2	7.6	.....	.....
2	.1	9.7	74	9.7	20	17	.1	.1	7.6	.....	.....
3	.1	9.7	67	6.7	.....	18	.1	.1	7.6	.2	.....
4	.1	6.7	60	4.1	14	19	.1	.1	5.4	.....	.....
5	.1	5.4	54	3	9.7	20	.1	715	5.4	.....	.....
6	.1	4.8	47	2.7	.....	21	.1	2,300	3.2	.....	.....
7	.1	4.1	43	2.4	.....	22	.1	715	3.2	.....	.....
8	.1	4.1	39	2.1	.....	23	.1	418	3.2	.....	.....
9	.1	3.7	35	1.9	.....	24	.1	244	2.3	.....	.....
10	.1	2	31	.....	.....	25	.1	150	2	.....	.....
11	.1	1	27	.....	.....	26	50	110	1.5	.....	.....
12	.1	.5	23	.....	.....	27	930	87	2	.....	.....
13	.1	.5	19	.....	.3	28	370	80	4.1	.....	.....
14	.1	.4	15	.....	.....	29	116	.....	6.7	.....	.....
15	.1	.3	11	.....	.....	30	40	.....	9.1	.....	.....
						31	26	.....	20	.....	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1914–15.							**1914–15.**						
1	0.1	209	738	64	515	41	16	0.1	289	167	39	141	1
2	.1	1,840	660	59	820	37	17	.1	334	142	34	155	4
3	.1	1,160	450	54	970	34	18	.1	380	130	29	269	6
4	.1	570	465	51	1,320	30	19	.1	310	119	22	250	9
5	.1	332	355	45	2,120	27	20	.1	480	109	70	186	11
6	.1	250	332	39	895	20	21	.1	530	99	119	128	14
7	.1	185	289	36	615	14	22	16	380	89	430	104	12
8	.1	120	232	34	570	13	23	1.9	269	72	319	94	10
9	.1	105	206	29	465	11	24	1.0	215	72	430	75	.8
10	.1	710	198	26	405	10	25	.5	465	72	212	66	6
11	.1	3,410	310	22	355	8	26	.2	289	64	167	58	4
12	.1	1,060	263	22	289	7	27	.1	232	64	142	66	2
13	.1	638	228	22	234	5	28	.1	198	64	109	58	.1
14	.1	465	196	22	202	4	29	1,090	.....	80	263	51	.1
15	.1	332	181	30	170	3	30	2,060	.....	72	550	48	.1
							31	500	.....	68	.....	44	.....

Day.	Mar.	Apr.	May.	June.	Day.	Mar.	Apr.	May.	June.
1915–16.					**1915–16.**				
1	.....	199	48	16	16	.....	108	24	1.5
2	.....	199	45	15	17	.....	96	26	1.5
3	.....	191	43	13	18	.....	91	27	1.0
4	.....	191	41	12	19	.....	86	24	1.0
5	.....	183	39	10	20	.....	81	30	1.0
6	.....	176	36	9	21	.....	76	28	.5
7	.....	168	34	8	22	.....	76	27	.5
8	.....	153	32	6	23	.....	72	26	.5
9	.....	153	30	5	24	.....	72	24	.1
10	.....	153	27	4	25	.....	72	24	.1
11	.....	153	26	3	26	.....	72	24	.1
12	.....	153	24	2	27	.....	64	24	.05
13	.....	160	24	2	28	.....	56	22	.05
14	.....	139	30	2	29	.....	53	21	.0
15	.....	126	27	1.5	30	215	51	19	.0
					31	199	.....	18	.....

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Daily discharge, in second-feet, of San Diego River near Santee, Calif., for 1912–1918—Con.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1916–17.							
1		89	65	170	47	50	33
2		155	59	116	47	44	20
3		116	53	84	42	42	19
4		98	50	80	40	40	17
5		80	44	80	33	37	16
6		65	42	80	33	33	15
7		72	42	80	33	30	14
8		80	40	72	31	27	12
9		72	37	89	37	40	9.5
10		136	42	116	76	42	7.5
11		50	40	89	59	33	6
12		48	42	89	50	29	4.8
13		47	42	80	50	27	4.0
14		59	42	94	44	22	3.2
15		126	42	89	37	19	3.0
16		116	37	84	430	17	2.8
17		116	89	80	340	16	2.6
18		147	158	59	194	29	2.4
19	4.5	218	142	59	102	44	2.2
20	3.5	308	126	59	112	32	2.0
21	2.5	267	116	59	89	27	1.8
22	2.5	194	147	65	80	24	1.6
23	2.5	107	980	59	65	24	1.4
24	5	98	374	50	65	22	1.2
25	147	94	280	53	62	56	1.0
26	136	89	254	50	53	47	.8
27	107	89	218	53	47	40	.5
28	107	84	194	50	50	42	.3
29	107	80	.....	42	53	40	.2
30	107	72	.....	42	53	37	.1
31	107	68	.....	44	.....	35	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1917–18.							1917–18.						
1				0.2	38	2	16				201	5	
2				.2	35	2	17				138	5	
3				.2	32	2	18				117	5	
4		0.2		.2	30	2	19				376	5	
5		.2		.2	30	1	20				475	4	
6				.3	28	1	21				288	4	
7			0.2	.3	21	1	22				161	4	
8				.5	18	1.1	23		0.1		117	4	
9				.2	16		24				108	4	
10				.2	14		25				99	3	
11				127	12		26				82	3	
12				5,350	8		27				74	3	
13				1,220	8		28				67	3	
14				462	8		29				53	3	
15				388	7		30				47	2	
							31				41		

NOTE.—Daily discharge determined as follows:

1912–13: Dec. 29, 1912, to Jan. 27, 1913, estimated; Jan. 28 to Feb. 28 and Mar. 11 to Apr. 5, 1913, from fairly well-defined rating curves; Mar. 1–10 and Apr. 6–30, by shifting-control method.

1914: Jan. 1–26, estimated. Gage-height not recorded Feb. 6, 10–19, 25 to Mar. 1, Mar. 3–5, 7–15, 22, 25, 27, and Apr. 6–8; discharge interpolated. Discharge for remainder of 1914 from well-defined rating curve.

1915: Jan. 1 to Feb. 2, from well-defined rating curve; Feb. 3 to June 30, from fairly well-defined rating curves. Gage height not recorded Jan. 24–28, Feb. 7 and 17, Mar. 24 and 31, Apr. 2, 7, 12–13, 15, 17, 20, May 30 to June 4, June 6, 7–15, 17–20, and 22–30; discharge interpolated.

1915–16: No record Oct. 1, 1915, to Mar. 29, 1916. Gage not read Apr. 29 to May 7, May 9, 11, 15, 17, 21, 23, 25, and May 28 to June 30; discharge interpolated.

1916–17: Gage not read Dec. 22–24, 28, 30, 1916, Jan. 2, 4, 7, 12, and June 15–20, 1917; discharge interpolated.

On days for which discharge is not given, except for periods explained above, there was no flow except small quantity of ground water rising to surface just above dam.

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Monthly discharge of San Diego River near Santee, Calif., for 1912–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1912–13.				
October			0.05	3
November			.1	6
December			.2	12
January	26	0.2	1.72	106
February	26	.1	3.75	208
March	46	3	17.2	1,060
April	28	.1	5.64	336
May			.05	3
June			.05	3
July			.05	3
August			.05	3
September			.05	3
The year				1,750
1913–14.				
January	930	.1	49.5	3,040
February	2,300	.1	175	9,720
March	77	1.5	23	1,410
The period				14,200
1914–15.				
January	2,060	0.1	118	7,260
February	3,410	105	563	31,300
March	738	64	212	13,000
April	550	22	116	6,900
May	2,120	44	379	23,300
June	41	.1	11.7	696
The year				82,500
1915–16.				
March 30–31	215	199	207	821
April	199	51	121	7,200
May	48	18	28.8	1,770
June	16	.0	3.86	231
The period				10,000
1916–17.				
December 19–31	147	2.5	64.5	1,660
January	308	47	111	6,830
February	980	37	136	7,550
March	170	42	74.7	4,590
April	430	31	81.8	4,870
May	56	16	33.8	2,080
June	33	.1	6.83	406
The period				28,000
1917–18.				
December			[a] .1	6.1
January			[a] .2	12.3
February			[a] .2	11.1
March	5,350	.2	320	19,700
April	38	2	12.1	720
May	2		[a] .7	43.0
The year	5,350	.0	28.3	20,500

[a] Estimated.

SAN DIEGO RIVER AT SAN DIEGO, CALIF.

Location.—At highway bridge in Block 391, Old Town subdivision, city of San Diego San Diego County, about 1½ miles above mouth. Station has also been maintained at Murray Canyon ford, in Ex Mission San Diego grant, about 3¾ miles north of San Diego and 2½ miles above station at highway bridge.

Drainage.—434 square miles: 431 square miles at Murray Canyon ford (measured on topographic maps).

Elevation.—Sea level.

Records available.—October 1, 1912, to December 19, 1914; January 1–31, 1916. At Murray Canyon ford, December 20, 1914, to September 30, 1915.

Gage.—Staff on left bank at highway bridge. At Murray Canyon ford staff was in two sections just above ford; lower section in center of channel; upper section on left bank. Gages not at same datum.

Discharge measurements.—Made from highway bridge at Old Town or by wading. When measurements were made from bridge, during 1914–15, frequent readings were also made at Murray Canyon gage.

Channel and control.—Sand; shifting. The concrete driveway built across channel at Murray Canyon served as a part control but results were not very satisfactory as sand collected on the concrete.

Extremes of discharge.—1912–1916: Maximum stage recorded, 19.3 feet (gage at highway bridge) January 27, 1916 (discharge, 75,000 second-feet); no flow for several months each year.

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DIVERSIONS.—See San Diego River near Santee. Water is pumped from gravels in Mission Valley above station. Record at this station shows quantity of water wasted into Pacific Ocean.

REGULATION.—None except as noted for station at Lakeside.

ACCURACY.—Stage-discharge relation not permanent. Rating curves usually well defined except for flood stages. Gages usually read to hundreths twice daily; read frequently during floods. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method; for January, 1916, taken from a hydrograph drawn through discharge measurements and conforming in general shape with that determined for San Luis Rey River at Oceanside. Records fair.

Discharge measurements of San Diego River at San Diego, Calif., for 1913-1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Mar. 14	F. C. Ebert	.....	0	Apr. 3	Ebert and Keenan	2.38	55
26	W. S. Post	6.44	7.6	19	W. D. McFadden	1.92	17
28	E. W. Case	6.64	15	May 5	Isbell and McFadden	9.71	1,139
Apr. 8	.....do	6.25	1.1	20	F. C. Ebert	2.90	187
14	F. C. Ebert	6.01	.05	June 2	D. L. Lee	2.42	65
				21	McClung and Ellis	1.90	1
1914.				Aug. 1	F. C. Ebert	.....	0
Jan. 27	W. S. Post	7.56	111				
29	F. C. Ebert	7.40	114	1916.			
31	W. E. Keenan	6.76	30	Jan. 17	R. H. Day	13.55	[a] 10,400
Feb. 2	F. C. Ebert	6.46	9.8	17	.....do	13.45	[a] 10,100
3	W. E. Keenan	6.36	5.8	18	.....do	13.34	[a] 7,380
7	.....do	6.18	.2	19	Ellis and McFadden	12.1	[a] 8,650
17	.....do	6.13	.....	20	.....do	9.1	[a] 2,180
19	Raylor and McFadden	6.58	18	21	W. D. McFadden	7.8	1,820
20	Hickok and Keenan	9.15	688	22	.....do	7.1	1,270
Mar. 5	W. E. Keenan	6.67	54	28	Ellis and Day	9.9	11,100
8	.....do	6.56	37	29	R. W. Day	9.98	6,560
19	.....do	6.25	9.7	Feb. 5	W. D. McFadden	9.5	1,100
27	F. C. Ebert	6.15	2.4	Mar. 18	McGlashan and Ebert	9.55	190
28	W. E. Keenan	6.20	4.2	29	T. P. Ellis	9.64	305
May 9	.....do	6.13	1.3	Apr. 3	R. W. Day	9.60	232
				17	.....do	9.43	104
1915.				22	.....do	9.38	102
Jan. 29	Lee and McFadden	9.09	574	May 10	McClung and Culver	9.14	29
29	.....do	9.74	955	June 8	.....do	8.37	.07
30	W. D. McFadden	11.25	2,380	Nov. 7	R. W. Day	.....	0
Feb. 2	Keenan and Armstrong	10.35	1,690	Dec. 30	W. D. McFadden	8.19	14
9	F. C. Ebert	2.34	107	Nov. 7	R. W. Day	.....	0
Mar. 9	.....do	3.02	250	Dec. 30	W. D. McFadden	8.19	14

[a] Float measurement.

Daily discharge, in second-feet, of San Diego River at San Diego, Calif., for 1912–1916

Day.	Mar.	Apr.	Day.	Mar.	Apr.	Day.	Mar.	Apr.
1912–13.			1912–13.			1912–13.		
1	.....	4	8	.....	0.05	15	.....	0.05
2	.....	5	9	.....	.05			
3	.....	4	10	.....	.05	26	2	.....
4	.....	2				27	11	.....
5	.....	.4	11	.....	.05	28	18	.....
			12	.....	.05	29	16	.....
6	.....	.4	13	.....	.05	30	5	.....
7	.....	30	14	.....	.05	31	2	.....

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Daily discharge, in second-feet, of San Diego River at San Diego, Calif., for 1912–1916—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1913–14.						1913–14.					
1		22	82	20		16		0	13		
2		12	75	18	22	17		0	9		
3		7	62	13		18		0	13		
4		4	62	13		19		5	13		
5		2	55	9		20		710	13		
6		1	49	6		21		1,820	13		
7		1	43	3		22		1,350	9		
8		1	38	3		23		422	9		
9		0	32	1		24		234	6		
10		0	27	0		25		222	6		
11		0	22	0		26		186	6		
12		0	22	0		27	237	124	6		
13		0	18	0		28	820	90	6		
14		0	18	0		29	188		13		
15		0	13	0		30	105		18		
						31	34		22		

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1914–15.							1914–15.						
1		390	425	55	385	74	16		405	155	17	200	12
2		1,310	740	45	530	74	17		385	145	23	165	10
3		2,120	640	40	425	74	18		365	130	26	215	2
4		1,110	465	38	555	70	19		345	120	15	250	15
5		635	425	35	1,160	63	20		310	100	8	178	1
6		400	310	40	885	55	21		740	90	5	165	.7
7		315	310	37	780	53	22		485	85	100	160	.6
8		160	280	38	535	53	23		310	80	215	160	.4
9		100	245	40	468	42	24		260	75	215	148	.3
10		590	235	37	400	36	25		345	70	185	135	.2
11		2,480	220	27	302	34	26		385	65	165	125	.1
12		1,940	210	20	285	28	27		245	60	120	118	.1
13		1,200	195	15	250	25	28		245	55	110	110	.1
14		780	185	16	215	22	29	780		65	110	103	
15		465	170	16	215	16	30	2,240		60	170	90	
							31	1,200		60		74	

Day.	Jan.	Day.	Jan.	Day.	Day.
1915–16.		1915–16.		1915–16.	
1		11		21	1,760
2		12		22	1,310
3		13		23	1,380
4		14		24	1,260
5		15		25	1,280
6		16		26	3,000
7		17	13,400	27	38,000
8		18	12,700	28	13,200
9		19	7,320	29	5,980
10		20	2,550	30	2,750
				31	1,280

NOTE.—Daily discharge determined as follows: 1913: Mar. 26 to Apr. 15, from well-defined rating curve. 1914, 1915: Jan. 28 to May 2, from fairly well defined rating curves. Jan. 29 to June 28, from fairly well defined rating curves and by shifting-control method. 1914–15 from four well-defined rating curves applicable for short periods and by shifting-control method.

1916: Water began flowing early in morning Jan. 17; crest of first flood at midnight Jan. 17; crest of second flood at 7 p. m Jan. 27; concrete highway bridge failed at 2.20 p. m. Jan. 27 Stream dry for days for which discharge is not given except May 3 to 8 and 10 to 14, 1914, for which no record was reported.

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Monthly discharge of San Diego River at San Diego, Calif., for 1912–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912–13.					1914–15.				
March	18	0	1.7	105	January	2,240	0	136	8,360
April	30	0	1.54	92	February	2,480	100	672	37,300
					March	740	55	209	12,900
The year	30	0	.27	197	April	215	5	66.1	3,930
1913–14.					May	1,160	74	316	19,400
January	820	0	44.6	2,740	June	74	0	25.4	1,510
February	1,820	0	186	10,300					
March	82	6	25.6	1,570	The year	2,480	0	115	83,400
April	29	6	2.9	173	1915–16.				
May	.....	0	.....	.....	January	75,000	0	3,400	213,000
The period	1,820	0	23.6	14,800					

BOULDER CREEK NEAR JULIAN, CALIF.

LOCATION.—In Cuyamaca grant, at outlet of Cuyamaca reservoir, 7 miles south of Julian, San Diego County, and 12 miles above mouth of Boulder Creek.

DRAINAGE AREA.—12.0 square miles (measured on topographic maps).

ELEVATION.—About 4,650 feet above sea level.

RECORDS AVAILABLE.—June 19, 1912, to September 30, 1918.

GAGE.—Vertical staff fastened on right side of weir box, 3½ feet above weir. Zero at elevation of crest of the 6-foot Cippoletti weir which is 100 feet below outlet gates of reservoir. Read daily by an employee of the Cuyamaca Water Co.

DISCHARGE MEASUREMENTS.—Made by wading near weir. On account of velocity of approach it has been necessary to rate weir.

CHANNEL AND CONTROL.—Cippoletti weir acts as permanent control.

EXTREMES OF DISCHARGE.—1912–1918: Maximum stage not known; maximum mean daily discharge recorded occurred January 28, 1916 (discharge, 1,877 second-feet); no water is released from the reservoir except when needed for Cuyamaca Water Co.'s flume.

DIVERSIONS.—None.

REGULATION.—Flow completely regulated by operation of outlet gate of reservoir. Cuyamaca dam, completed in 1886, was one of the first earth dams built in California to store water for irrigation. The dam was originally 35 feet high but in 1894 was enlarged, increasing the capacity of the reservoir to 11,400 acre-feet. The present dam is 635 feet long and 41½ feet high, with an inner slope of 2:1 and an outer slope of 1½:1. From the reservoir the water flows 12½ miles down the natural channel of Boulder Creek and San Diego River to the intake of Cuyamaca Water Co.'s flume.

ACCURACY.—Stage-discharge relation permanent except when changes are made in weir. Rating curves well defined. Gage read to hundredths daily with additional observations when reservoir gates are changed. Daily discharge ascertained by applying mean daily gage height to rating table. Record excellent when discharge does not exceed capacity of weir.

COOPERATION.—Records of daily discharge for 1916, 1917, and 1918 furnished by Cuyamaca Water Co., Ed. Fletcher, manager.

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Discharge measurements of Boulder Creek at Cuyamaca reservoir, near Julian, Calif., for 1912–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
July 25	E. W. Case	0.58	12	Nov. 4	W. J. Isbell	.71	13.7
25	do	.73	16	8	do	.22	2.3
26	do	.26	4.1	1915.			
26	do	.41	6.9	Sept. 18	F. C. Ebert	.32	3.9
1914.				18	do	.43	6.0
Aug. 21	F. C. Ebert	.40	5.5	1917.			
Sept. 10	do	.22	2.2	June 28	D. A. McClung	.35	4.8
Oct. [illegible]	do	.24	3.0				

Daily discharge, in second-feet, of Boulder Creek at Cuyamaca reservoir, near Julian, Calif., for 1912–1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1912.					1912.				
1		7.5	7.5	7.5	16		11	9.2	4.6
2		7.5	12	7.5	17		12	9.5	4.6
3		7.5	12	5.5	18		9.5	9.5	5.5
4		6.6	12	5.5	19	4.6	11	9.5	4.6
5		5.5	12	3.7	20	5.9	12	7.8	4.6
6		7.5	12	3.7	21	5.9	12	5.5	4.6
7		9.5	12	3.7	22	9.5	12	5.5	4.6
8		5.5	12	3.7	23	9.5	12	5.5	4.6
9		7.5	12	5.5	24	9.5	12	12	4.6
10		7.5	12	3.7	25	7.8	8.0	12	4.6
11		8.5	12	3.7	26	7.5	12	.0	4.6
12		9.5	.0	4.6	27	9.5	12	.0	4.6
13		9.5	9.5	5.5	28	9.5	12	1.3	4.6
14		9.5	9.5	6.6	29	9.5	12	3.7	3.7
15		9.5	9.5	5.5	30	3.7	7.5	3.7	3.7
					31		7.5	4.6	

Day.	Oct.	Nov.	Dec.	Jan.	May.	June.	July.	Aug.	Sept.
1912-13.									
1	3.7	2.4	0.0	2.1	0.0	1.3	8.5	6.6	2.4
2	3.7	2.4	.0	2.1	.0	1.3	8.5	6.6	2.4
3	.0	2.4	.8	2.1	.0	1.3	8.5	6.6	2.4
4	.0	2.4	.8	2.1	.0	1.3	8.5	6.6	5.5
5	.0	2.4	.8	2.1	.0	1.3	8.5	6.6	2.4
6	.0	2.4	.8	2.1	.0	1.3	8.5	6.6	2.4
7	.0	2.4	.8	2.1	.0	2.1	8.5	6.6	8.0
8	.0	2.4	.8	2.1	.0	2.8	10.6	6.6	8.0
9	.0	2.4	.8	.8	.0	2.8	10.6	6.6	8.0
10	.0	2.4	.8	.0	.0	2.8	10.6	6.6	3.7
11	2.1	2.4	.8	.0	.0	2.8	10.6	6.6	7.5
12	4.6	2.4	.8	.0	.0	6.8	10.6	6.6	7.5
13	6.6	2.4	.8	.0	.0	6.8	10.6	6.6	7.5
14	6.6	2.4	.8	.0	.0	6.8	10.6	6.6	7.5
15	5.5	2.4	.8	.0	.0	6.8	10.6	6.6	7.5
16	5.5	2.4	.8	.0	.0	8.5	10.6	6.6	7.5
17	5.5	2.4	.8	.0	.0	8.5	10.6	6.6	5.5
18	5.5	2.4	.8	.0	.0	8.5	10.6	6.6	5.5
19	5.5	2.4	.8	.0	.0	9.5	10.6	7.5	5.5
20	3.7	2.4	.8	.0	.0	10.6	10.6	7.5	5.5
21	3.7	2.4	.8	.0	.0	10.6	10.6	5.9	5.5
22	3.7	2.4	.8	.0	.8	12	7.5	5.9	5.5
23	3.7	2.4	.8	.0	.8	12	7.5	5.9	5.5
24	3.7	2.4	.8	.0	.8	12	5.5	5.9	5.5
25	3.7	2.4	.8	.0	.8	12	5.5	5.9	5.5
26	3.7	2.4	.8	.0	.8	12	5.5	5.9	5.5
27	4.1	2.4	.8	.0	1.3	5.5	5.5	5.9	5.5
28	4.1	2.4	.8	.0	1.3	5.5	5.5	5.9	5.5
29	4.1	2.4	2.1	.0	1.3	7.0	6.6	5.9	5.5
30	4.1	2.4	2.1	.0	1.3	8.5	6.6	5.9	5.5
31	2.4		2.1	.0	1.3		6.6	5.9	

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Daily discharge, in second-feet, of Boulder Creek at Cuyamaca reservoir, near Julian, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	July.	Aug.	Sept.	Day.	Oct.	Nov.	July.	Aug.	Sept.
1913–14.						1914–15.					
1	4.2	0.4	0.0	0.0	5.6	1	2.3	3.3	.....	3.1	7.8
2	1.6	.4	.0	.0	5.6	2	1.4	3.3	.....	3.6	7.8
3	1.6	.4	.0	8.3	5.6	3	.0	6.2	.....	4.2	7.8
4	1.6	.4	.0	8.3	5.6	4	.0	7.4	.....	5.6	6.8
5	1.6	.3	.0	8.3	5.6	5	.0	1.2	.....	7.0	5.6
6	1.6	.....	.0	8.3	5.6	6	.0	1.0	.....	8.3	5.6
7	1.6	.....	.0	8.3	3.6	7	.0	1.0	.....	8.3	5.6
8	1.6	.....	1.0	5.6	3.6	8	.0	1.0	.....	8.3	5.6
9	1.6	.....	6.0	3.6	3.6	9	.0	.3	.....	8.3	5.6
10	4.2	.....	6.0	3.6	3.6	10	.0	.....	.....	9.4	7.6
11	4.2	.....	6.0	5.6	2.3	11	2.5	.....	.....	11	8.5
12	2.2	.....	7.8	5.6	2.3	12	3.3	.....	.....	11	8.6
13	2.2	.....	7.8	5.6	2.3	13	3.0	.....	.....	7.9	8.6
14	2.2	.....	7.8	5.6	2.3	14	2.3	.....	.....	7.8	7.2
15	2.8	.....	7.8	5.6	2.3	15	3.0	.....	.....	7.8	5.4
16	4.2	.....	7.8	5.6	2.3	16	3.0	.....	.....	6.7	4.2
17	4.2	.....	7.8	5.6	2.3	17	3.0	.....	.....	5.3	4.2
18	4.2	.....	7.8	5.6	3.3	18	3.0	.....	.....	5.2	4.2
19	.6	.....	7.8	5.6	3.3	19	2.5	.....	.....	5.2	5.4
20	.6	.....	7.8	5.6	3.3	20	2.0	.....	21	6.5	5.4
21	.6	.....	7.8	5.6	3.3	21	1.1	.....	28	8.3	7.7
22	.6	.....	3.4	5.6	3.3	22	.7	.....	30	8.3	7.6
23	.6	.....	3.4	3.6	3.3	23	.7	.....	52	7.2	7.6
24	1.6	.....	3.4	3.6	3.3	24	1.7	.....	92	6.8	7.6
25	1.6	.....	3.4	3.6	3.3	25	2.0	.....	12	5.6	7.6
26	1.6	.....	3.4	3.6	3.3	26	2.0	.....	36	6.8	6.5
27	.6	.....	3.4	3.6	3.3	27	2.6	.....	49	5.8	6.5
28	.4	.....	3.4	3.6	3.3	28	3.3	.....	67	5.6	6.5
29	.4	.....	5.2	3.6	3.3	29	3.3	.....	67	5.6	5.6
30	.4	.....	5.2	5.6	3.3	30	3.3	.....	58	5.6	5.6
31	.4	.....	7.8	5.6	.....	31	3.3	.....	40	6.5	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Aug.	Sept.
1915–16.								
1	5.6	6.0	1.4	.....	329	40	1.5	1.9
2	6.7	6.0	1.4	.....	325	40	3.0	3.0
3	6.7	6.0	3.3	.....	323	40	5.2	3.0
4	6.7	6.0	.8	.....	240	40	3.0	3.5
5	6.7	6.0	.....	.....	.....	40	3.0	4.1
6	6.7	2.7	.....	.....	.....	40	3.0	4.1
7	7.8	.0	.....	.....	.....	40	3.0	4.1
8	7.8	.0	.....	.....	.....	40	3.0	4.1
9	7.8	.0	.....	.....	.....	30	1.9	4.1
10	7.8	.0	.....	.....	.....	.....	1.9	4.1
11	7.8	.0	.....	.....	.....	.....	1.1	4.1
12	6.7	.0	.....	.....	.....	.....	1.1	4.1
13	6.7	.0	.....	.....	.....	.....	1.1	4.1
14	6.7	.0	.....	.....	.....	.....	1.1	4.1
15	6.7	.0	.....	.....	.....	.....	1.1	4.1
16	7.3	.0	.....	.....	.....	.....	1.1	4.1
17	7.4	4.6	.....	.....	.....	.....	1.1	7.8
18	6.0	4.6	.....	33	.....	.....	1.1	5.5
19	6.0	4.6	.....	106	.....	.....	1.9	5.5
20	6.0	1.4	.....	106	.....	.....	1.9	5.5
21	6.0	1.4	.....	66	.....	.....	1.9	5.5
22	6.0	1.4	.....	.....	.....	.....	1.9	5.5
23	6.0	1.4	.....	.....	.....	17	1.9	5.5
24	6.0	1.4	.....	.....	.....	30	1.9	5.5
25	6.0	1.4	.....	11	.....	30	1.9	5.5
26	6.0	1.4	.....	23	.....	30	1.9	5.5
27	6.0	1.4	.....	820	.....	27	1.9	5.5
28	6.0	1.4	.....	1,880	.....	.....	1.9	5.5
29	6.0	1.4	.....	815	3	.....	1.9	4.5
30	6.0	1.4	.....	550	.....	.....	1.9	2.5
31	6.0	.....	.....	345	.....	.....	1.9	.....

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Daily discharge, in second-feet, of Boulder Creek at Cuyamaca reservoir, near Julian, Calif., for 1912–1918—Continued.

Day.	Oct.	June.	July.	Aug.	Sept.	Day.	Oct.	June.	July.	Aug.	Sept.
1916–17.						1916–17.					
1	2.5	.....	6.9	9.1	8.9	16	.....	.....	7.2	7.8	8.9
2	.9	.....	6.9	9.1	8.9	17	.....	.....	7.2	7.8	8.9
3	.....	.....	6.9	9.1	8.9	18	.....	.....	7.2	7.8	8.9
4	.....	.....	6.9	9.1	8.9	19	.....	.....	7.2	7.8	8.9
5	.....	.....	6.9	8.6	8.9	20	.....	.....	7.7	7.8	8.9
6	.....	.....	6.9	7.8	8.9	21	.....	.....	9.1	8.2	8.9
7	.....	.....	7.5	7.8	8.9	22	.....	.....	9.1	8.9	8.9
8	.....	.....	8.3	7.8	8.9	23	.....	.....	9.1	8.9	8.9
9	.....	.....	8.3	7.8	8.9	24	.....	.....	9.1	8.9	8.9
10	.....	.....	9.3	7.8	8.9	25	.....	.....	9.1	8.9	8.9
11	.....	.....	9.9	7.8	8.9	26	.....	2.8	9.1	8.9	8.9
12	.....	.....	8.6	7.8	8.9	27	.....	2.8	9.1	8.9	8.9
13	.....	.....	8.5	7.8	8.9	28	.....	4.4	9.1	8.9	8.9
14	.....	.....	8.6	7.8	8.9	29	.....	5.0	9.1	8.9	8.9
15	.....	.....	7.2	7.8	8.9	30	.....	6.9	9.1	8.9	8.9
						31	.....	.....	9.1	8.9	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	May.	June.	July.	Aug.	Sept.
1917–18.										
1	8.9	9.4	.....	2.7	.....	.....	.....	7.2	11.6	11.6
2	8.9	4.3	.....	2.7	7.7	.....	.....	7.2	11.6	7.5
3	8.9	4.3	.....	2.7	11.1	.....	.....	11.4	11.6	7.5
4	8.9	4.3	.....	2.7	12.6	.....	.....	11.4	11.6	7.5
5	8.9	4.3	.....	2.7	24	.....	.....	11.4	11.6	7.5
6	8.9	4.3	.....	2.5	22	.....	.....	11.4	11.6	7.5
7	8.9	.....	.....	1.8	19.2	.....	.....	11.4	11.6	7.5
8	8.9	.....	.....	1.8	21	.....	4.4	11.4	11.6	7.5
9	8.9	.....	.....	1.8	23	.....	7.2	11.4	11.6	7.5
10	8.9	2.2	.....	1.8	22	.....	7.2	11.4	11.6	7.5
11	8.9	3.6	.....	1.8	22	.....	7.2	11.4	11.6	9.2
12	8.9	3.6	.....	1.8	22	.....	7.2	11.4	11.6	11.6
13	4.4	3.6	.....	1.0	22	.....	7.2	8.9	11.6	11.6
14	6.9	3.6	.....	.....	22	.....	7.2	8.9	11.6	10.1
15	3.0	3.6	.....	.....	22	.....	7.2	8.9	11.6	10.1
16	5.3	3.6	.....	.....	22	.....	7.2	8.9	11.6	8.0
17	2.6	3.6	.....	.....	22	4.7	7.2	8.9	11.6	8.0
18	4.3	3.6	1.6	.....	14.1	4.7	7.2	8.9	11.6	8.0
19	4.3	3.6	1.6	.....	.....	4.7	7.2	8.9	11.6	8.0
20	4.3	3.6	1.6	.....	.....	3.9	7.2	8.9	11.6	8.0
21	4.3	3.6	1.6	.....	2.0	2.7	7.2	11.6	11.6	8.0
22	4.3	3.6	1.6	.....	.6	2.0	7.2	11.6	11.6	8.0
23	4.3	3.6	2.3	.....	.....	.8	7.2	11.6	11.6	8.0
24	4.3	3.6	2.3	.....	.....	.8	7.2	11.6	11.6	8.0
25	4.3	3.6	.9	.....	.....	.8	7.2	11.6	11.6	10.7
26	4.3	3.6	.9	.....	.....	.8	7.2	11.6	11.6	10.7
27	4.3	3.6	.9	.....	.....	.8	7.2	11.6	11.6	10.7
28	4.3	.....	.9	.....	.....	.8	7.2	11.6	11.6	10.7
29	4.3	.....	.9	.....	.....	.4	7.2	11.6	11.6	10.7
30	4.3	.....	.9	.....	.....	.....	7.2	11.6	11.6	10.7
31	4.3	.....	.9	.....	.....	.....	.....	11.6	11.6	.....

NOTE.—No water released from Cuyamaca reservoir except as shown by tables.

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Monthly discharge of Boulder Creek at Cuyamaca reservoir, near Julian, Calif., for 1912–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1912.				
June 19–30	9.5	3.7	7.70	183
July	12	5.5	9.45	581
August	12	.0	8.24	507
September	7.5	3.7	4.80	286
1912–13.				
October	6.6	.0	3.21	197
November	2.4	2.4	2.40	143
December	2.1	.0	.87	53
January	2.1	.0	.57	35
May	1.3	.0	.34	21
June	12	1.3	6.37	379
July	10.6	5.5	8.72	536
August	7.5	5.9	6.41	394
September	8	2.4	5.57	331
The year	12	.0	2.89	2,090
1913–14.				
October	4.2	.4	1.85	114
November	.4	.0	.06	4
July	7.8	.0	4.48	275
August	8.3	.0	5.09	313
September	5.6	2.3	3.57	212
The year	8.3	.0	1.27	918
1914–15.				
October	3.3	.0	1.78	109
November	7.4	.0	.82	49
July	12	.0	2.13	131
August	11	3.1	6.86	422
September	8.6	4.2	6.54	389
The year	12	.0	1.52	1,100
1915–16.				
October	7.8	5.6	6.57	404
November	6.0	.0	2.06	123
December	3.3	.0	.22	14
January	1,880	.0	153	9,410
February	329	.0	42.1	2,420
March	40	.0	15.6	959
August	5.2	1.1	2.00	123
September	7.8	1.9	4.53	270
The year	1,880	.0	18.9	13,700
1916–17.				
October	2.5	.0	.11	6.8
June	6.9	.0	.73	43.4
July	9.9	6.9	8.20	504
August	9.1	7.8	8.36	514
September	8.9	8.9	8.90	530
The year	9.9	.0	2.21	1,600
1917–18.				
October	8.9	2.6	6.10	375
November	9.4	.0	3.14	187
December	2.3	.0	.61	37.5
January	2.7	.0	.90	55.3
February	24	.0	11.9	661
May	4.7	.0	.90	55.3
June	7.2	.0	5.43	323
July	11.6	7.2	10.6	652
August	11.6	11.6	11.6	713
September	11.6	7.5	8.93	531
The year	24	.0	4.96	3,590

NOTE.—No water released from Cuyamaca reservoir in months for which discharge is not shown. The totals therefore represent records for full year.

BOULDER CREEK AT MOUTH, NEAR LAKESIDE, CALIF.

LOCATION.—In NW. ¼ sec. 12, T. 14 S., R. 2 E., just above junction with San Diego River, about 14 miles northeast of Lakeside, San Diego County.

DRAINAGE AREA.—33.5 square miles (measured on topographic maps).

ELEVATION.—About 800 feet above sea level.

RECORDS AVAILABLE.—August 12, 1912, to January 26, 1916.

GAGE.—Vertical staff, installed March 1, 1914, on right wing wall of weir box, 300 feet above mouth of creek, at same datum as gage destroyed by flood in January, 1914. When the station was established a weir without end contractions was installed. The gage, which was fastened to left side of box, was at same elevation as crest of weir. Weir board was removed November 9, 1912, and gage readings were obtained by measuring from a reference point until January 22, 1913, when a vertical staff was installed on left bank in pool above weir box; datum, 2.0 feet below original gage.

DISCHARGE MEASUREMENTS.—Made from foot plank over flume or by wading.

CHANNEL AND CONTROL.—Sand, gravel, and boulders; fairly permanent. The weir box acts as a control. Both banks are fairly high and not likely to be overflowed.

EXTREMES OF DISCHARGE.—1912–1916: Maximum stage recorded, 7.00 feet January 18, 1916 (discharge, 345 second-feet); no flow July 2 to 8, 1914.

DIVERSIONS.—None.

REGULATION.—Water is stored at Cuyamaca reservoir and released during low-water period. See Boulder Creek near Julian.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curves well defined below 80 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for medium and low stages; high-water records fair.

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Discharge measurements of Boulder Creek at mouth, near Lakeside, Calif., for 1912–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Aug. 16	F. C. Ebert	0.53	7.3	Feb. 3	F. C. Ebert	2.93	66
Oct. 2	do	.31	3.4	6	do	1.74	20
1913.				Mar. 10	Day and Munday	2.10	29
Jan. 12	W. S. Post	1.06	2.2	17	do	1.75	19
16	do	1.56	15	24	do	1.57	13
22	F. C. Ebert	1.10	3.4	31	F. C. Ebert	1.53	13
Feb. 16	do	1.03	2.0	Apr. 7	R. W. Day	1.45	10
26	E. W. Case	1.62	18	14	do	1.39	9.6
Mar. 15	F. C. Ebert	1.40	12	21	do	1.33	27
May 13	do	.93	1.8	May 12	McClung and Harritt	3.00	65
1914.				19	do	2.50	46
Jan. 20	F. C. Ebert	1.17	4.6	26	do	2.05	27
28	do	2.50	45	June 2	do	1.82	19
Apr. 20	do	1.03	2.5	9	do	1.62	14
May 12	W. D. McFadden	1.20	5.4	16	do	1.48	10
13	F. C. Ebert	1.17	5	23	do	1.38	8.0
Oct. 17	do	1.01	2	30	D. A. McClung	1.25	6.1
				July 10	F. C. Ebert	1.15	4.6
				Sept. 24	do	1.32	6.1
				Dec. 8	do	1.08	2.2

Daily discharge, in second-feet, of Boulder Creek at mouth, near Lakeside, Calif., for 1912–1916.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1912.			1912.			1912.		
1		4.1	11		4.1	21	4.7	4.1
2		4.7	12	2.8	4.7	22	4.3	3.8
3		5.6	13	7.3	4.3	23	4.7	3.9
4		5.5	14	7.3	5.1	24	9.1	4.0
5		3.6	15	7.1	4.7	25	9.3	4.3
6		4.0	16	7.1	5.1	26	2.6	4.0
7		3.8	17	8.1	4.1	27	1.3	3.8
8		4.3	18	8.1	4.1	28	.3	3.8
9		4.3	19	8.4	4.1	29	4.0	3.8
10		4.7	20	5.5	3.4	30	4.3	3.1
						31	3.8	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912-13.												
1	3.1	4.1	5.3	2.0	2.6	12.5	9.5	3.0	2.8	5.0	3.0	2.5
2	3.1	3.1	3.1	2.9	2.6	13.5	11	3.0	2.7	4.8	3.0	2.2
3	3.4	3.6	2.6	3.2	2.5	8.6	11	3.0	2.7	4.8	3.0	2.1
4	8.6	4.3	2.6	3.2	2.5	11	10.5	2.9	2.7	5.0	4.4	2.7
5	7.5	4.0	3.0	2.9	2.5	14	8.6	2.9	2.6	5.0	4.4	2.0
6	7.9	4.0	2.6	2.9	2.9	11	8.0	2.9	2.6	4.8	3.0	2.0
7	3.4	4.0	2.6	2.9	2.9	16	8.0	2.9	2.5	4.8	3.0	4.2
8	2.2	3.3	2.5	2.8	3.8	14	7.4	2.9	2.7	6.8	3.2	4.4
9	1.8	2.8	2.5	2.8	4.0	16	6.2	2.9	2.8	6.2	3.4	4.4
10	1.7	3.2	2.4	2.9	3.2	11	6.5	2.7	3.2	6.2	3.2	2.5
11	1.5	4.0	2.5	3.2	2.8	10	5.0	2.7	3.2	6.5	3.4	1.8
12	1.9	4.8	2.5	2.8	2.9	14	5.0	2.4	3.4	5.6	3.2	4.2
13	4.1	4.0	2.5	2.6	2.9	14	5.0	1.8	4.8	6.2	3.2	4.6
14	6.4	3.0	2.5	2.3	2.9	14	5.0	2.0	4.8	8.0	3.2	4.6
15	4.7	3.2	2.4	2.3	2.9	12.5	6.5	1.7	5.6	7.4	3.2	4.6
16	5.1	2.9	2.6	12	2.3	11	5.3	1.6	6.2	7.4	3.2	3.4
17	5.1	2.8	2.4	11	2.3	8.6	5.0	1.6	6.5	7.1	3.4	3.0
18	5.2	2.7	2.4	9.5	2.2	8.0	4.6	1.6	6.5	8.0	3.1	2.9
19	6.4	2.8	2.6	5.6	2.2	8.0	5.0	1.6	7.1	8.0	4.6	3.0
20	5.2	2.8	2.4	4.4	2.4	8.6	4.8	1.8	6.5	8.0	5.3	3.0
21	5.1	2.8	2.4	4.0	2.9	11	4.6	1.7	6.5	5.0	3.8	3.0
22	5.2	2.6	2.5	3.0	26	9.5	4.0	1.8	6.5	4.4	3.8	3.0
23	5.1	2.3	2.2	3.0	25	18	4.2	2.5	9.5	4.0	3.6	3.2
24	4.7	2.7	2.4	2.5	8.6	17	4.0	2.5	8.0	4.0	3.6	4.0
25	5.1	2.7	2.5	2.5	4.0	14	3.0	2.0	8.0	2.5	3.6	3.8
26	5.2	2.8	2.4	2.5	26	15	3.0	2.0	8.0	3.0	4.0	3.5
27	5.1	2.6	2.3	2.6	20	13	3.4	2.0	8.9	3.0	4.0	3.3
28	5.2	2.6	2.1	2.7	18	11	3.0	2.3	5.6	5.0	3.6	3.0
29	5.2	2.6	2.2	2.6		11	3.0	2.5	6.2	5.0	4.1	3.0
30	4.7	2.8	2.1	2.6		11	3.0	2.5	5.0	3.0	6.5	3.0
31	4.7		2.0	2.6		11		2.8		3.0	4.0	

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Daily discharge, in second-feet, of Boulder Creek at mouth, near Lakeside, Calif., for 1912–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	3.2	1.4	2.0	2.7	.....	12	3.6	14.5	2.6	1.0	8.0	2.2
2	3.6	1.5	1.9	2.5	.....	10.5	3.4	17	2.6	.0	1.8	2.3
3	2.4	1.6	1.8	2.3	.....	8.6	3.4	10.5	2.6	.0	1.8	2.2
4	2.6	1.8	1.8	2.2	.....	7.4	3.4	10.5	2.6	.0	4.6	2.1
5	2.1	1.6	1.8	2.0	.....	7.1	3.4	7.4	2.6	.0	5.6	2.1
6	2.0	1.5	1.8	2.0	.....	6.5	3.6	5.9	2.4	.0	5.6	2.2
7	1.8	1.5	1.8	2.0	.....	6.5	3.4	5.9	2.4	.0	5.6	1.9
8	1.6	1.4	1.8	2.0	.....	5.9	3.4	4.6	3.6	.0	4.2	2.7
9	2.0	1.3	1.8	2.0	.....	5.3	3.2	4.0	3.6	1.0	2.9	2.3
10	3.4	1.1	1.8	2.0	.....	4.8	3.2	4.0	3.0	2.0	2.5	2.3
11	2.6	1.1	1.8	1.8	.....	4.8	3.4	4.0	2.4	2.0	2.4	1.9
12	2.3	1.1	1.8	1.8	.....	4.4	3.4	3.8	2.4	2.8	2.3	1.4
13	2.2	11.0	1.8	1.8	.....	4.2	3.2	4.4	2.0	8.0	2.9	1.6
14	2.3	2.3	1.8	1.8	.....	4.2	2.9	4.4	1.9	4.2	2.9	1.6
15	3.2	1.8	1.8	1.8	.....	4.0	2.9	4.4	1.9	3.0	2.9	1.9
16	3.4	1.8	1.7	2.5	.....	4.0	2.9	4.2	1.8	6.5	3.0	1.6
17	3.2	1.7	1.8	5.0	.....	3.8	2.8	4.2	1.8	5.6	2.9	1.6
18	3.0	1.6	1.8	4.0	.....	3.4	2.7	3.8	1.8	6.2	2.3	1.8
19	2.9	1.9	1.8	11.0	.....	3.6	2.7	3.8	1.8	5.9	2.9	1.9
20	2.0	3.0	1.8	5.0	.....	3.2	2.6	3.8	1.8	5.9	2.9	2.0
21	1.7	2.8	1.9	3.4	.....	3.4	2.5	3.6	1.6	5.6	2.9	2.0
22	1.5	2.2	2.0	3.0	.....	3.0	4.6	3.2	1.6	2.8	3.0	2.1
23	1.6	1.8	5.0	2.8	.....	3.0	18	3.2	1.6	2.3	2.3	2.0
24	1.7	1.8	3.4	3.0	.....	3.4	9.5	3.2	1.5	2.3	2.5	2.0
25	1.8	1.8	2.7	3.4	.....	3.2	4.6	3.2	1.5	2.3	2.5	2.0
26	1.8	1.8	3.2	5.6	.....	3.4	4.2	3.2	1.4	2.3	1.6	2.0
27	1.4	1.8	2.0	83	.....	3.8	4.2	3.2	1.3	2.2	1.0	2.3
28	1.3	1.8	2.5	29	.....	3.8	3.8	3.0	1.3	2.2	1.0	2.2
29	1.5	1.8	2.5	.....	.....	3.4	4.8	3.0	1.2	2.3	1.1	2.1
30	1.4	1.8	2.2	.....	.....	4.0	19.5	2.8	1.1	2.8	1.9	2.1
31	1.4	.....	2.5	.....	.....	3.6	.....	2.8	.....	4.6	2.0	.....
1914–15.												
1	3.0	3.3	1.7	2.7	40	46	11	61	21	6.0	5.2	7.8
2	3.2	3.3	1.7	2.3	92	46	10	76	19	5.6	4.8	8.4
3	4.2	3.3	2.0	2.3	86	48	10	71	20	5.4	5.0	9.4
4	3.5	3.4	1.5	2.3	38	42	9.0	81	19	5.4	5.8	9.6
5	1.8	7.8	1.5	2.5	46	40	9.4	190	18	5.0	6.2	7.4
6	1.0	3.3	1.6	2.5	19	38	10	152	16	4.7	7.8	7.4
7	1.5	2.4	1.6	2.5	14	36	9.8	134	15	4.6	7.8	7.4
8	1.5	2.2	1.6	2.6	12	34	7.4	116	15	4.4	8.0	7.4
9	1.5	2.0	1.7	2.6	10	30	9.0	104	13	4.4	7.8	7.2
10	1.4	11	1.7	3.0	76	30	8.4	92	12	4.4	7.6	7.8
11	1.5	2.1	1.7	2.6	183	34	8.0	76	12	4.1	9.4	8.2
12	2.0	2.1	3.1	2.6	110	28	8.0	68	12	4.1	9.4	8.2
13	2.2	2.0	3.0	2.5	22	25	7.8	61	12	3.8	9.0	8.2
14	2.2	1.5	2.7	2.5	42	24	8.6	54	11	3.8	7.6	8.2
15	2.4	1.5	2.9	2.6	32	21	11	46	9.8	3.8	7.6	7.8
16	2.5	1.5	2.2	2.6	30	20	9.4	42	9.6	3.5	7.4	7.0
17	2.5	1.5	2.3	2.5	34	19	8.4	40	9.0	3.4	7.0	4.7
18	1.5	1.5	8.0	2.4	26	18	8.2	46	8.6	3.2	5.4	4.7
19	1.5	1.5	4.2	2.3	22	14	7.8	44	8.6	3.1	5.4	5.0
20	1.8	1.5	4.1	2.3	34	16	7.4	40	8.2	3.1	4.7	5.0
21	1.6	1.4	3.8	2.2	42	15	13	36	8.2	3.3	5.8	5.8
22	2.0	1.4	3.2	6.8	32	15	40	32	8.0	4.4	7.0	7.0
23	1.5	1.4	3.1	6.4	28	13	40	30	7.8	5.4	7.0	6.6
24	1.2	1.5	3.5	4.2	26	13	56	28	7.4	5.8	7.2	7.0
25	1.2	1.5	3.1	4.4	42	12	34	26	7.2	17	5.8	7.4
26	1.1	1.5	2.9	5.0	32	12	28	26	7.2	6.0	5.8	7.4
27	1.0	1.6	2.8	3.6	26	12	25	24	7.0	5.0	4.8	6.6
28	1.5	1.6	2.5	4.1	23	12	24	23	6.8	7.4	6.2	6.6
29	2.1	1.6	2.8	68	.....	16	28	22	6.0	7.6	5.4	6.6
30	2.3	1.7	2.7	116	.....	13	76	22	6.2	8.0	5.0	5.4
31	3.4	.....	2.7	44	.....	12	.....	21	.....	6.8	6.2	.....

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Daily discharge, in second-feet, of Boulder Creek at mouth, near Lakeside, Calif., for 1912–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Day.	Oct.	Nov.	Dec.	Jan.
1915–16.					1915–16.				
1	4.4	4.8	2.5	3.1	16	5.5	1.5	5.0	75
2	4.8	4.8	2.5	3.2	17	6.5	1.4	3.7	25
3	5.0	5.0	2.8	4.8	18	4.8	4.0	3.2	301
4	5.0	5.0	7.0	3.8	19	4.6	4.2	2.8	232
5	4.8	5.0	9.0	4.4	20	4.4	4.4	2.5	204
6	5.0	6.0	3.8	6.0	21	4.4	3.0	2.5	218
7	5.5	5.5	3.2	5.5	22	4.4	2.5	2.3	99
8	6.0	2.3	2.5	4.2	23	4.4	2.5	2.2	46
9	6.0	2.3	2.1	4.4	24	4.4	2.5	2.1	54
10	6.5	3.6	2.1	7.5	25	4.4	2.8	2.1	89
11	7.0	2.1	2.1	22	26	4.4	2.6	2.2	194
12	6.5	2.4	2.0	12	27	4.4	2.6	2.2	.....
13	5.5	1.9	2.0	9.0	28	4.4	2.5	2.1	.....
14	5.0	1.5	3.7	7.5	29	4.4	2.5	2.1	.....
15	5.5	1.5	9.0	36	30	4.4	2.5	3.4	.....
					31	4.4	.....	3.7	.....

NOTE.—Daily discharge determined as follows: Aug. 12 to Nov. 8, 1912, computed from weir formula $Q=3.33\ L\ H^{\frac{3}{2}}$.
Nov. 9, 1912, to Sept. 30, 1914, from fairly well-defined rating curve.
Oct. 1, 1914, to Sept. 30, 1915, from rating curve fairly well defined between 1 and 80 second-feet.
No gage-height record Jan. 29 to Feb. 28, 1914.
No gage-height record Nov. 22–30, Dec. 5–9, 1914, and Mar. 16, 1915; discharge estimated.

Monthly discharge of Boulder Creek at mouth, near Lakeside, Calif., for 1912–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912.					1913–14.				
August 12–31	9.3	0.83	5.53	219	June	3.6	1.1	2.06	123
September	5.6	3.00	4.20	250	July	8.0	.0	2.77	170
1912–13.					August	8.0	1.0	2.96	180
October	8.6	1.5	4.63	285	September	2.7	1.4	2.01	120
November	4.3	2.3	3.18	189	1914–15.				
December	5.3	2.0	2.56	157	October	4.2	1.0	1.99	122
January	12	2.0	3.70	228	November	11	1.4	2.46	146
February	26	2.2	6.64	369	December	8.0	1.5	2.71	167
March	18	8.0	12.2	750	January	116	2.2	10.2	627
April	11	3.0	5.77	343	February	183	10	43.5	2,420
May	3.0	1.6	2.34	144	March	48	12	24.3	1,490
June	9.5	2.5	5.14	306	April	76	7.4	18.1	1,080
July	8.0	2.5	5.40	332	May	190	21	60.8	3,740
August	6.5	3.0	3.70	228	June	21	6.0	11.4	678
September	4.6	1.8	3.23	192	July	17	3.1	5.24	322
					August	9.4	4.7	6.62	407
The year	26	1.5	4.86	3,520	September	9.6	4.7	7.11	423
1913–14.					The year	190	1.0	16.0	11,600
October	3.6	1.3	2.22	136	1915–16.				
November	11	1.1	2.05	122	October	7.0	4.4	5.05	311
December	5	1.7	2.13	131	November	6.0	1.4	3.17	189
January 1–28	83	1.8	6.84	380	December	9.0	2.0	3.24	199
February	.....	.....	.....	.....	January 1–26	301	3.1	64.2	3,310
March	12	3.0	4.91	302					
April	19.5	2.5	4.64	276	The period	.....	.....	.....	4,010
May	17	2.8	5.15	317					

CUYAMACA WATER CO.'S FLUME[1] AT DIVERTING DAM, NEAR LAKESIDE, CALIF.

LOCATION.—In SE. ¼ sec. 11, T. 14 S., R. 2 E., just below intake, at diverting dam about 13 miles northeast of Lakeside, San Diego County.

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1918.

GAGE.—Vertical staff in stilling box on outside of flume, about 1,000 feet below intake; installed April 8, 1916. Staff and water-stage recorder previously used were 500 feet below intake and just above sand box. Datum has always been elevation of floor of flume. (See Pl. IX, *B*, p. 60.)

[1] Previously called San Diego flume.

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DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

CHANNEL AND CONTROL.—The flume was lined with tar paper in 1914 to reduce leakage.

EXTREMES OF DISCHARGE.—1912–1918: Maximum mean daily discharge 51 second-feet March 24, 1913. No flow for certain periods nearly every year.

ACCURACY.—Stage-discharge relation not permanent throughout the period covered by record on account of changes in flume. Several well-defined rating curves have been used. When water-stage register was not in operation staff gage was read to hundredths three times daily. Mean daily gage height determined from gage height graph by inspection. Daily discharge ascertained by applying mean daily gage heights to rating tables. Records good.

Cuyamaca Water Co.'s flume which diverts water from San Diego River and receives water from the South Fork of San Diego River, is more than 30 miles long, 6 feet wide and 24 inches deep. It discharges into La Mesa reservoir, about 8 miles northeast of San Diego. (See also p. 99 and Pl. IX.) This system supplied the city of San Diego with water until 1906, when the Southern California Mountain Water Co. extended its system to the city. The flume was again used to furnish the city of San Diego after the floods of 1916, and it now supplies water for irrigation and domestic service. The Capitan Grande Indian Reservation has a water right of 0.8 second-foot from this flume. At the sand box, just below the gage, water is occasionally wasted into San Diego River.

Discharge measurements of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., for 1912–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
May 1	F. C. Ebert	1.71	40	Feb. 24	R. W. Day	1.69	32
24	do	.50	4.6	25	do	1.69	32
24	do	.68	8.2	Mar. 3	do	1.67	31
24	do	.96	16.5	4	do	1.68	32
24	do	1.19	22	10	do	1.59	26
24	do	1.67	49	11	do	1.60	26
24	do	1.92	49	17	do	1.60	25
July 15	do	.81	8.4	18	do	1.60	24
15	do	.56	4.4	24	do	1.63	25
15	do	.41	2.2	25	do	1.62	26
15	do	1.08	14.5	Mar. 31	F. C. Ebert	1.63	26
Aug. 16	do	.75	7.0	Apr. 7	R. W. Day	1.60	26
Oct. 2	do	.47	3.0	8	do	1.55	25
Nov. 9	W. S. Post	.53	3.3	14	do	1.10	15.6
Dec. 16	Taylor and Harritt	.53	3.3	15	do	1.10	15.9
1913.				21	do	1.29	23
Jan. 13	W. S. Post	.80	9.4	22	do	.86	11
22	F. C. Ebert	.81	8.6	29	Day and McClung	.51	4.1
22	E. W. Case	.82	9.7	May 12	McClung and Harritt	1.68	32
Feb. 16	F. C. Ebert	.58	4.4	19	do	1.65	31
Mar. 15	do	1.30	23	26	do	1.68	30
May 13	do	.56	5.1	June 2	do	1.68	29
1914.				9	do	1.70	29
Jan. 20	Cuyamaca Water Co.	.43	5.0	16	do	1.59	25
20	do	.27	2.2	23	do	1.48	21
20	do	.70	11.7	30	D. A. McClung	1.16	13.6
20	do	1.15	25	July 10	F. C. Ebert	.97	10.8
Mar. 10	W. S. Post	1.28	25	Sept. 24	do	.77	6.2
11	C. E. Hickok	1.28	24	Dec. 8	do	.74	4.8
Apr. 7	do	.90	13.6	1916.			
20	F. C. Ebert	.57	6.0	Apr. 14	F. C. Ebert	1.23	26
May 13	do	.95	12.2	May 24	D. A. McClung	1.17	18.5
Oct. 16	do	.32	1.2	Dec. 13	F. C. Ebert	.87	10.5
16	do	.12	(a)	13	do	.40	2.3
Oct. 17	do	0.36	1.5	22	do	.61	5.5
Dec. 23	D. A. McClung	.56	4.8	1917.			
1915.				Nov. 7	D. A. McClung	.52	4.3
Jan. 7	D. A. McClung	.43	2.5	7	do	.89	10.5
13	do	.43	2.3	7	do	.71	7.0
20	do	.43	2.1	7	do	1.02	13.4
27	do	1.18	17.5	9	do	.40	2.6
28	do	.87	10.5	10	do	.82	9.3
Feb. 6	Lee and Ebert	.92	12.0	1918.			
14	W. S. Post	1.74	34	Feb. 8	D. A. McClung	1.33	22
17	R. W. Day	.76	8	Mar. 7	F. C. Ebert	.92	12.2
18	do	.75	7.8				

a Day.

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., for 1912–1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1912.					1912.				
1	11.6	8.2	6.9	3.6	16	6.9	8.2	6.5	3.2
2	10.7	9.1	7.2	4.1	17	7.6	9.8	7.2	3.5
3	9.1	9.1	10.2	4.8	18	5.9	9.3	10.0	3.3
4	8.7	10.0	10.0	4.7	19	4.4	9.3	7.6	2.9
5	7.8	7.0	10.4	4.0	20	7.0	10.7	7.2	2.8
6	7.8	7.6	9.8	3.2	21	7.6	10.7	4.1	2.8
7	7.4	10.7	9.1	2.7	22	9.5	10.7	3.7	2.6
8	7.2	10.0	7.8	2.6	23	11.2	10.2	.6	3.1
9	6.9	6.9	7.4	3.2	24	11.9	8.9	5.1	2.7
10	7.2	8.0	10.2	4.0	25	12.6	10.2	8.0	2.7
11	6.9	7.4	10.2	2.9	26	10.7	7.2	6.1	2.6
12	6.9	8.9	7.2	3.2	27	9.8	6.9	.4	2.9
13	6.9	9.1	2.1	3.1	28	11.2	8.9	.2	2.7
14	6.7	9.3	6.3	4.0	29	11.2	10.7	1.7	2.8
15	7.0	9.3	7.2	2.8	30	12.6	10.2	3.1	2.4
					31	.....	7.6	2.8	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912-13.												
1	3.0	3.3	2.3	2.5	4.3	37	28	6.1	6.0	7.8	4.4	3.6
2	3.0	3.8	2.4	1.4	4.0	43	32	5.3	5.3	7.4	4.1	2.9
3	2.6	4.0	4.0	2.6	4.0	40	36	3.2	4.7	7.4	3.8	2.8
4	10	3.5	4.0	2.8	4.0	36	27	3.2	4.8	6.5	3.6	2.7
5	10	4.5	3.5	2.9	4.0	41	24	3.2	4.4	5.8	3.5	1.7
6	11	4.1	3.1	1.5	4.0	37	17	3.2	4.4	5.8	3.3	2.8
7	6.9	3.8	3.5	1.1	4.0	35	17	4.0	4.2	6.1	3.3	3.7
8	4.8	3.8	3.3	1.4	10	29	18	4.0	4.2	7.4	3.3	4.0
9	3.7	4.0	3.2	.5	8.7	23	24	5.2	4.4	7.8	3.3	3.6
10	2.0	3.8	3.1	2.7	7.1	24	18	5.4	4.2	8.0	3.5	2.1
11	2.0	3.8	3.2	5.6	5.5	22	12	5.2	4.2	8.0	3.5	2.2
12	3.2	3.5	3.3	8.0	5.5	40	11	5.2	5.8	7.6	3.3	3.7
13	3.1	3.5	3.3	7.2	5.5	46	11	4.9	5.9	8.2	3.3	3.7
14	4.2	3.5	3.3	5.5	5.1	48	11	4.9	5.9	8.2	3.3	3.8
15	3.1	3.6	3.5	4.4	4.8	8.2	12	4.0	6.1	8.0	3.3	3.3
16	4.1	3.7	3.6	6.4	4.5	8.8	12	2.8	6.1	8.0	3.3	2.9
17	3.6	3.8	3.6	8.8	4.2	21	13	2.6	6.7	7.6	3.2	3.0
18	3.5	3.0	3.5	8.8	4.2	24	13	2.7	4.8	7.8	3.5	3.0
19	3.1	3.0	3.5	8.8	4.2	27	13	2.7	4.5	7.2	3.7	3.3
20	3.0	3.5	3.3	8.5	4.2	29	14	2.7	5.1	5.8	4.0	3.2
21	3.0	3.7	3.3	8.1	4.2	32	14	2.7	6.7	5.5	4.0	3.2
22	2.7	4.0	3.1	9.0	13	13	13	2.9	6.7	5.3	3.8	3.0
23	3.2	4.0	3.1	8.8	32	14	1.6	3.0	7.2	4.8	3.6	3.3
24	3.5	3.3	.9	7.9	37	51	8.2	3.0	8.0	4.5	3.5	3.0
25	3.5	3.6	2.0	6.7	37	50	7.6	3.7	8.0	3.8	3.5	3.5
26	3.2	3.5	3.2	5.0	37	50	6.1	4.4	8.0	3.5	3.6	2.8
27	3.6	3.5	3.0	4.2	37	37	6.1	4.2	8.2	3.5	3.6	3.2
28	3.5	2.9	2.7	3.8	37	29	5.9	4.1	8.9	4.0	3.6	3.0
29	3.2	2.7	3.0	3.8	.....	28	5.5	4.0	8.0	4.5	3.7	3.2
30	3.5	2.7	3.3	4.0	.....	24	5.8	4.8	7.1	4.5	4.2	2.9
31	3.3	.....	2.7	3.8	.....	22	.....	4.9	.....	4.5	4.1	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	3.5	.....	0.0	3.0	19	28	22	13	5.5	0.0	4.1	3.8
2	2.5	.....	.0	2.8	19	28	19	14	5.5	.0	3.2	3.8
3	2.1	.....	.0	2.3	19	28	16	20	5.5	.0	2.4	3.5
4	2.3	.....	.0	2.4	19	28	15	25	5.7	.0	3.2	3.5
5	2.2	.....	.0	2.4	15	28	14	24	5.7	.0	3.9	2.8
6	2.4	.....	.0	.0	16	28	15	13	5.1	.0	2.9	3.2
7	2.5	.....	.0	.0	16	26	17	14	3.9	.0	4.3	3.0
8	2.3	.....	.6	.0	8.7	25	17	11	11	.0	3.9	3.6
9	1.4	.....	.6	.0	11	24	14	12	9.6	5.0	3.5	3.3
10	2.8	.....	.0	.0	11	25	14	16	11	3.0	3.2	2.1
11	2.7	.....	.0	.0	11	24	14	14	6.4	2.0	2.4	1.5
12	2.4	.....	.0	.0	11	23	14	14	3.8	3.5	2.4	1.9
13	2.0	.....	.0	.0	13	23	14	12	6.2	4.6	3.2	1.9
14	2.2	.....	.6	.0	12	19	13	11	3.8	4.3	3.2	2.0
15	2.7	.....	.0	.0	11	18	12	11	4.7	4.4	3.0	2.3
16	2.3	.....	.0	.0	9.4	20	11	12	3.3	4.6	3.2	2.3
17	2.4	.....	.9	.0	7.8	18	11	11	.1	4.6	3.3	2.1
18	2.4	.....	.9	.0	11	16	11	13	.0	3.0	3.3	2.0
19	2.4	.....	.0	.0	6.6	16	6.0	9.1	.0	3.3	3.3	1.9
20	2.2	.....	.6	.7	9.8	16	6.4	8.3	.0	3.8	3.8	1.4
21	2.6	.....	.6	.0	3.5	15	7.2	7.4	.0	3.0	3.8	1.2
22	1.6	.....	2.4	1.2	19	15	12	7.8	.0	3.0	3.9	1.5
23	1.3	.....	6.2	.0	24	14	21	7.6	.0	2.9	3.8	1.8
24	1.2	.....	3.8	.0	28	13	27	7.8	.0	2.6	3.2	1.8
25	.5	.....	.0	.0	22	14	26	7.8	.0	2.8	3.2	1.8
26	.2	.....	1.6	.0	29	14	19	8.3	.0	2.6	3.6	1.6
27	.0	.....	3.9	.0	28	17	16	7.4	.0	2.8	3.5	1.6
28	.0	.....	3.0	8.3	28	17	15	7.6	.0	2.8	3.5	1.4
29	.6	.....	3.0	18	.....	22	16	7.0	.0	2.8	3.2	1.8
30	.5	.....	3.0	19	.....	24	15	6.6	.0	2.9	3.2	1.2
31	.0	.....	2.0	19	.....	24	.....	5.7	.....	3.3	3.6	.....
1914–15.												
1	.....	2.0	.....	3.0	25	30	26	3.3	29	15	8.0	8.0
2	.....	1.6	.....	2.9	17.5	28	25	3.8	29	15	6.7	8.4
3	6.0	2.3	.....	2.6	1.5	32	24	17	29	14.5	6.9	6.9
4	3.5	3.8	.....	2.5	2.0	32	24	15.5	29	14.5	8.7	7.6
5	1.9	4.9	.....	2.4	12.5	32	24	3.3	29	14	8.4	8.0
6	2.0	3.3	.....	2.4	10	32	25	15.5	28	12.5	8.4	6.7
7	1.7	3.3	.....	2.4	23	32	25	27	28	12	8.4	8.9
8	1.5	3.3	.....	2.4	25	32	24	30	28	10.5	8.7	8.9
9	1.1	3.3	.....	1.8	25	27	21	30	28	10.5	9.6	8.7
10	.9	3.9	.....	1.9	16	25	19	30	28	10.5	9.3	9.8
11	1.4	3.2	.....	2.5	.6	23	17	30	28	11	9.3	9.8
12	1.9	3.3	.....	2.6	.1	25	17	31	27	9.6	8.9	9.8
13	1.6	1.9	.....	2.4	6.8	25	18	31	25	7.3	7.8	9.8
14	1.4	2.5	.....	2.4	12.5	26	16.5	31	25	9.3	7.1	8.2
15	1.2	2.3	.....	2.4	2.0	26	15.5	31	.25	8.2	7.1	8.2
16	1.3	1.3	.....	2.4	8.1	26	15.5	31	25	6.9	7.3	8.4
17	1.2	.....	.....	2.4	8.1	26	15.5	31	25	9.1	6.3	8.2
18	1.2	.....	.....	2.5	7.8	26	15	31	25	7.8	6.3	4.8
19	1.3	.....	.....	1.9	19	25	17.5	31	25	7.6	6.3	4.8
20	1.3	.....	.....	2.1	16	26	13.5	31	25	8.2	7.3	5.0
21	1.5	.....	.....	2.4	17.5	26	16	31	21	8.0	7.6	6.5
22	1.6	.....	.....	6.2	22	26	10.5	31	21	7.8	6.5	6.3
23	1.6	.....	4.3	15.5	27	26	10	29	22	8.2	5.8	6.3
24	1.6	.....	4.3	18	31	26	10.5	29	22	8.7	5.4	6.3
25	1.9	.....	3.8	12.5	30	26	10.5	29	22	12	6.3	6.5
26	2.3	.....	3.0	12.5	32	26	17.5	29	18	8.9	7.3	6.5
27	2.5	.....	3.9	15	32	26	6.4	29	18	8.7	4.8	6.7
28	2.0	.....	4.3	9.4	32	26	3.5	29	18	8.4	4.8	5.4
29	1.9	.....	3.6	8.5	.....	26	2.6	29	17.5	8.7	5.4	5.6
30	1.9	.....	3.6	10	.....	26	5.7	29	14	8.7	6.1	5.6
31	1.9	.....	3.3	14.5	.....	26	.....	29	.....	7.6	6.7	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915-16.												
1	5.0	4.8	3.4	14.5	.....	.....	.0	26	15.5	7.8	5.2	3.0
2	6.1	5.0	4.1	13	.....	.....	.0	26	14.5	5.2	3.7	3.0
3	6.1	5.0	5.9	15	.....	.....	.0	26	13	4.0	3.7	2.4
4	5.9	5.5	4.2	15.5	.....	.....	.0	26	12.5	3.7	3.7	3.1
5	6.1	5.7	4.8	10.5	.....	.....	.0	26	11	3.7	3.7	3.0
6	6.3	7.4	4.8	9.0	.....	.....	.0	26	10	3.8	3.7	4.0
7	5.9	4.8	4.8	9.0	.....	.....	.0	26	5.2	5.9	4.0	4.0
8	5.9	2.5	4.8	9.0	.....	.....	4.3	26	13.5	6.6	4.3	3.8
9	6.1	2.0	4.8	9.0	.....	.....	3.7	27	14	5.9	4.4	4.6
10	6.1	2.3	10.5	9.0	.....	.....	3.7	26	14	6.1	3.7	5.4
11	6.5	2.4	9.0	9.4	.....	.....	3.7	27	14	5.4	3.8	5.7
12	6.1	2.5	7.2	9.0	.....	.....	3.3	21	14	5.7	3.7	5.7
13	5.9	2.5	1.4	9.0	.....	.....	13	20	14	5.2	3.7	5.7
14	5.9	2.5	1.8	12	.....	.....	26	20	14	11.5	3.4	5.2
15	5.9	2.4	.1	14	.....	.....	26	20	14	8.5	3.0	4.9
16	5.9	2.2	.0	12	.....	.....	26	19.5	8.7	8.0	3.0	6.1
17	7.2	2.2	.0	10	.....	.....	26	18.5	7.6	6.1	3.8	6.8
18	4.8	2.2	.0	.....	.....	.....	26	19	5.7	5.6	4.3	6.6
19	4.4	2.4	.0	.....	.....	.....	26	20	11.5	5.7	5.7	7.2
20	5.4	2.5	.0	.....	.....	.....	26	26	9.6	5.7	5.2	9.1
21	4.4	3.6	.8	.....	.....	.....	26	26	12	5.2	4.6	7.6
22	5.4	3.6	.1	.....	.....	.....	26	26	12.5	5.0	4.0	7.0
23	5.4	3.6	.0	.....	.....	.....	26	18.5	12.5	4.9	5.4	7.4
24	5.4	3.6	.4	.....	.....	.....	26	18	12	4.6	3.1	7.0
25	5.4	3.6	1.2	.....	.....	.....	26	18	10	4.4	3.0	6.8
26	4.8	3.4	3.1	.....	.....	.....	26	17.5	10	4.0	5.6	7.4
27	4.8	3.4	4.4	.....	.....	.....	26	17.5	7.6	3.7	4.0	8.7
28	4.8	3.4	.3	.....	.....	.....	26	16.5	7.0	3.7	3.3	8.3
29	4.2	3.4	.6	.....	.....	.....	26	16	7.0	3.7	3.1	7.4
30	4.2	3.6	7.2	.....	.....	.....	26	15.5	7.0	3.7	3.1	9.6
31	4.2	.....	15.5	.....	.....	.....	.....	15.5	.....	4.2	3.0	.....
1916-17.												
1	5.6	5.6	3.7	9.1	2.3	3.0	3.4	5.2	3.7	10	9.6	6.6
2	3.8	5.6	3.7	9.1	2.3	3.0	3.0	5.2	3.7	8.5	8.9	6.6
3	5.0	5.6	2.3	5.6	2.3	3.0	3.0	5.2	3.7	8.3	8.5	6.6
4	6.1	5.6	2.3	4.3	3.7	3.4	3.0	5.2	3.7	8.3	8.0	6.6
5	4.4	5.6	2.3	8.3	4.0	5.6	3.0	5.2	3.7	8.3	8.0	6.6
6	7.4	5.6	2.3	10	2.2	5.2	3.0	5.2	3.7	8.3	6.5	6.6
7	5.6	5.6	2.3	10	.0	3.7	3.0	5.2	3.7	10	6.1	6.5
8	3.5	5.6	2.3	10	.0	5.2	3.0	5.2	3.7	9.1	6.1	6.3
9	.0	5.6	2.3	10	.0	5.2	3.0	5.2	3.7	8.0	6.1	6.3
10	2.9	5.6	2.3	10	.0	5.2	3.0	5.2	4.4	7.4	6.1	6.6
11	4.9	5.6	2.3	9.8	.0	5.2	3.0	5.2	4.9	7.4	6.1	6.6
12	5.0	5.6	2.3	9.8	.7	5.2	3.0	5.2	4.9	8.7	6.1	6.1
13	5.2	5.6	2.4	4.0	1.0	5.2	3.0	5.2	6.8	9.6	6.1	5.6
14	5.2	5.6	2.6	5.0	1.0	5.2	2.0	5.2	8.7	9.3	6.1	5.2
15	5.2	5.4	2.6	4.0	1.0	5.2	1.0	5.2	11.5	8.0	6.1	5.4
16	5.2	5.4	2.6	4.0	3.7	5.2	.2	5.2	12.5	7.6	6.1	5.6
17	5.2	5.6	2.6	2.1	3.7	5.2	.7	5.2	9.8	7.0	5.9	5.6
18	5.2	5.6	2.6	1.4	2.3	5.2	3.1	5.2	8.7	7.0	5.6	5.6
19	5.2	5.6	2.6	1.4	2.3	5.2	3.1	5.2	8.5	9.3	5.6	5.6
20	5.2	5.6	2.6	5.6	2.3	5.2	3.1	5.2	7.6	7.6	5.6	5.6
21	5.2	5.6	2.6	5.6	3.3	4.8	3.1	5.2	7.6	7.8	6.3	6.5
22	5.2	5.6	3.8	5.2	3.7	3.7	3.1	5.2	7.2	7.6	6.8	6.8
23	5.2	5.6	4.0	3.3	2.1	3.7	3.1	5.2	6.8	7.8	6.8	6.8
24	5.2	5.6	4.6	3.0	2.7	3.7	3.1	5.2	6.5	8.0	6.8	6.8
25	5.2	5.6	1.8	3.0	3.0	3.3	3.1	5.2	6.1	8.5	6.8	7.0
26	5.2	5.6	5.2	2.9	3.0	4.8	3.1	5.2	4.9	8.0	6.8	7.0
27	5.2	4.3	5.2	3.0	3.0	6.1	3.1	3.7	5.0	8.5	6.8	6.8
28	5.7	3.7	9.1	3.0	3.0	6.1	3.1	3.7	7.0	10.5	6.6	6.3
29	5.6	3.7	9.1	3.0	.....	6.1	4.4	3.7	7.6	8.9	6.6	6.1
30	5.6	3.7	9.1	3.0	.....	4.9	5.2	3.7	9.1	8.5	6.6	6.1
31	5.6	.....	9.1	2.6	.....	4.4	.....	3.7	.....	11	6.6	.....

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Daily discharge in second-feet, of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., for 1912-1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917-18.												
1	6.5	3.7	.....	3.0	3.7	9.6	26	8.3	7.4	6.1	9.8	10.5
2	6.5	7.8	.....	3.3	4.0	7.8	26	7.6	6.8	5.6	10	9.6
3	6.6	4.6	.....	3.3	9.8	6.8	26	6.3	4.4	7.0	10	7.4
4	6 1	3.7	.....	3.4	11	6.3	26	5.7	4.0	8.7	9.3	6.5
5	6.1	3.8	.....	6.1	21	6.1	24	5.7	4.9	9.1	9.1	5.7
6	6.1	5.2	.....	3.3	23	6.1	19.5	6.3	4.3	9.3	9.8	6.3
7	6.1	7.6	.....	3.1	22	10.5	20	6.5	2.7	9.6	10.5	6.6
8	6.3	4.9	.....	3.3	23	22	18	7.2	2 4	9.6	10	6.5
9	6.3	1.5	.....	3.4	25	29	18.5	10.5	4.4	9.8	10.5	6.3
10	6 5	4.0	.....	3.6	25	29	18.5	10.5	6.5	9.6	10.5	6.3
11	6.8	3.0	.....	3.3	25	20	17.5	8.7	5.6	9.6	10	7.4
12	8.0	3.0	.....	2.9	25	13.5	18	8.0	6.6	9.6	10	8.7
13	7.6	4.3	.....	10	26	18	18.5	6.3	6.5	9.1	10	10.5
14	7.6	5.2	.....	9.3	26	14.5	19.5	6.3	5.9	8.0	10	10
15	7.8	5.0	.....	4.6	26	28	17.5	5.7	6.8	7.2	10.5	9.3
16	7.8	5.0	.....	3.1	20	28	16	6.3	7.4	7.2	12	9.6
17	7.2	5.0	.....	2.7	24	28	14	5.9	8.5	6.5	11.5	8.0
18	5.9	5.0	.....	2.6	27	28	12.5	7.2	7.4	6.5	10	6.1
19	4.4	4.4	3.0	1.8	22	26	9.1	8.3	7.6	7.4	9.8	5.6
20	3.7	3.8	6.3	1.8	12.5	15	9.6	7.8	8.3	6.5	9.8	6.1
21	3.7	3.8	5.2	2.0	10.5	25	10.5	8.0	6.8	7.6	9.8	6.2
22	3.7	4.0	4.8	2.0	23	27	12.5	8.3	7.8	8 7	9.8	7.2
23	3.7	4.9	4.6	2.0	23	28	11	9.1	7.0	9.3	9.8	8.0
24	3.7	5.2	3.6	2.0	23	25	12	7.0	7.8	9.6	9.8	9.3
25	3.7	5.4	4.0	2.0	18.5	25	11.5	6.6	7.4	9.8	9.8	9.6
26	3.7	5.6	4.3	16	20	27	10	6.6	6.8	9.8	9.8	9.8
27	3.7	5.7	3.8	17	16.5	26	9.6	6.6	6.3	9.8	9.8	9.8
28	3.7	5.6	3.1	7.0	13.5	26	8.3	7.2	6.3	9.8	10	9.8
29	3.7	6.5	3.3	5.2	.....	26	8.5	14	6.1	9.8	10.5	9.6
30	3.7	6.6	3.3	3.7	.....	26	8.7	13.5	6.5	9.6	10.5	10
31	3.7	.....	3.3	3.7	.....	26	.....	7.8	.....	9.6	10.5	.....

NOTE.—Probably no discharge during November, 1913.

Discharge Oct. 27, 28, 31, Dec. 6 and 7, 1913, and July 8-10, 1914, estimated. No record Oct. 1-2 and Nov. 17 to Dec. 22, 1914. No flow Jan. 18 to Apr. 7, Oct. 9, 1916, and Feb. 7-11 and Dec. 1-18, 1917. Discharge July 24, 1918 interpolated.

Monthly discharge of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., for 1912-1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1912.				
June	12.6	4,4	8.63	514
July	10.7	6.9	9.04	556
August	10.4	.2	6.33	389
September	4.8	2.4	3.20	190
1912-13.				
October	11	2	4.07	250
November	4.5	2.7	3.58	213
December	4.0	.9	3.12	192
January	9	.5	5.05	311
February	37	4.0	12.0	666
March	51	8.2	32.2	1,980
April	36	5.5	14.6	869
May	6.1	2.6	3.94	242
June	8.9	4.2	5.95	354
July	8.2	3.5	6.28	386
August	4.4	3.2	3.60	221
September	4.0	1.7	3.10	184
The year	51	.5	8.11	5,870

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1913-14.				
October	3.5	0.0	1.81	111
November	.0	.0	.0	0
December	6.2	.0	1.09	67
January	19	.0	2.55	157
February	29	3.5	15.6	866
March	28	14	21.0	1,290
April	27	6	15.0	893
May	25	5.7	11.9	732
June	11	.0	3.23	192
July	4.6	.0	2.50	154
August	4.3	2.4	3.36	207
September	3.8	1.2	2.25	134
The year	29	.0	6.64	4,809
1914-15.				
October 3-31	6.0	.9	1.83	105
November 1-16	4.9	1.3	2.89	92
December 23-31	4.3	3.0	3.79	68
January	18	1.8	5.56	342
February	32	.1	16.5	916

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Monthly discharge of Cuyamaca Water Co.'s flume at diverting dam, near Lakeside, Calif., for 1912–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1914–15.				
March	32	23	27.2	1,670
April	26	2.6	16.4	976
May	31	3.3	26.0	1,600
June	29	14	24.4	1,450
July	15	6.9	9.99	614
August	9.6	4.8	7.21	443
September	9.8	4.8	7.35	437
1915–16.				
October	7.2	4.2	5.50	338
November	7.4	2.0	3.47	206
December	15.5	.0	3.39	208
January	15.5	.0	6.09	374
February	.0	.0	.00	0
March	.0	.0	.00	0
April	26	.0	15.8	940
May	27	15.5	21.8	1,340
June	15.5	5.2	11.1	660
July	11.5	3.7	5.39	331
August	5.7	3.0	3.93	242
September	9.6	2.4	5.88	347
The year	27	.0	6.88	5,000
1916–17.				
October	7.4	.0	4.99	307
November	5.6	3.7	5.35	318
December	9.1	1.8	3.70	228
1916–17.				
January	10	1.4	5.52	339
February	4.0	.0	2.09	116
March	6.1	3.0	4.71	290
April	5.2	.2	2.90	173
May	5.2	3.7	4.96	305
June	12.5	3.7	6.31	375
July	11	7.0	3.48	521
August	9.6	5.6	6.67	410
September	7.0	5.2	6.28	374
The year	12.5	.0	5.19	3,760
1917–18.				
October	8.0	3.7	5.50	338
November	7.8	1.5	4.79	285
December	6.3	.0	1.70	105
January	17	1.8	4.53	279
February	27	3.7	19.6	1,090
March	29	6.1	20.6	1,270
April	26	8.3	15.9	946
May	14	5.7	7.74	476
June	8.5	2.4	6.24	371
July	9.8	5.6	8.56	526
August	12	9.1	10.1	621
September	10.5	5.6	8.08	481
The year	29	.0	9.37	6,790

CUYAMACA WATER CO.'S FLUME[1] NEAR LAKESIDE, CALIF.

LOCATION.—At patrolman's cabin, half a mile above trestle crossing at Los Coches Creek, 3 miles southeast of Lakeside, San Diego County, and 20 miles below intake on San Diego River.

RECORDS AVAILABLE.—January 1, 1907, to September 30, 1918.

GAGE.—Vertical staff in stilling box fastened to outside of flume just below patrolman's cabin at same site as water-stage recorder. Position of gage has been changed slightly several times since station was first established, but datum has always been same as elevation of floor of flume. (See Pl. IX, *C*.)

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

CHANNEL AND CONTROL.—In the fall of 1914 the flume was deepened 8 inches, and more tar-paper lining was put in. Elevation of flume appears to vary slightly with quantity of water flowing. Capacity of flume slightly increased as a result of repairs made December 1–19, 1917.

DIVERSIONS.—Water is diverted into the flume from South Fork of San Diego River, and a small quantity is diverted from this flume at Capitan Grande Indian Reservation above station.

EXTREMES OF DISCHARGE.—1907–1918: Maximum mean daily discharge 25 second-feet February 16, 1918. No flow for certain periods nearly every year.

[1] Previously known as San Diego flume.

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ACCURACY.—Stage-discharge relation not permanent on account of changes in flume. The flume is in poor condition, and during the summer months contains a growth of moss. Rating curves fairly well defined. Gage is read to hundredths three times daily. Water-stage recorder in operation during a part of the record; mean daily gage heights obtained by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating tables and by shifting-control method. Records for 1916 and 1917 fair; remainder of those for periods covered good.

See description of Cuyamaca Water Co.'s flume at diverting dam near Lakeside, page 93.

Discharge measurements of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1908–1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1908.			
May 27	W. V. Hardy	0.66	9.6
Nov. 13	do	.50	5.8
Dec. 6	do	.27	1.8
1909.			
Jan. 25	W. V. Hardy	.52	6.3
Mar. 23	do	.51	6.2
25	do	.74	12.4
Apr. 6	do	.42	4.5
19	Clapp and Hardy	.74	11.5
May 25	W. V. Hardy	.80	11.6
1910.			
Jan. 22	W. V. Hardy	.35	3.3
Feb. 12	do	.53	7.8
Mar. 4	do	.56	8.8
11	do	.63	9.8
Apr. 1	do	.68	11
3	do	.51	6.8
25	do	.72	12
27	do	.76	12
May 6	do	.72	11
23	do	.57	8
June 3	do	.66	9.5
26	do	.64	8.1
Nov. 18	do	.30	2.7
1911.			
Feb. 10	W. V. Hardy	.82	14
Oct. 9	F. C. Ebert	.....	0
1912.			
May 6	F. C. Ebert	.76	12.8
June 29	do	.68	10.4
Aug. 20	E. W. Case	.45	4.7
Oct. 4	F. C. Ebert	.30	2.6
1913.			
Jan. 23	F. C. Ebert	.58	8.2
Feb. 17	do	.38	3.6
Mar. 16	do	.27	1.7
Apr. 15	H. D. McGlashan	.76	12
May 14	F. C. Ebert	.43	4.7
June 20	do	.39	3.0
Aug. 24	do	.31	2.2
Oct. 3	do	.14	.4
1914.			
Feb. 1	F. C. Ebert	.23	1.7
Mar. 3	do	.91	16
24	do	.95	16
Apr. 19	do	.74	11
May 12	do	.76	12
Oct. 5	do	.40	2.3
16	do	.36	2.1
Dec. 30	D. A. McClung	.49	4.0
1915.			
Jan. 14	D. A. McClung	.44	2.0
21	do	.41	1.5
1915.			
Jan. 27	F. C. Ebert	0.84	13.6
30	D. A. McClung	.76	9.5
31	F. C. Ebert	1.00	18.3
Feb. 4	Ebert and McClung	.56	4.6
4	F. C. Ebert	.56	4.7
6	Lee and Ebert	.80	12.0
7	C. H. Lee	1.14	21
10	D. A. McClung	1.16	21
25	R. W. Day	1.19	23
Mar. 3	do	1.04	18
5	F. C. Ebert	1.06	18.8
10	R. W. Day	1.04	17.7
17	do	1.19	18.7
24	do	1.12	18.2
29	F. C. Ebert	1.10	18.8
Apr. 1	do	1.10	18.7
7	R. W. Day	1.05	18
14	do	1.11	21
21	do	1.10	21
28	do	.67	8.2
May 5	McClung and Harritt	.65	7
12	do	1.18	22
18	F. C. Ebert	1.02	16.6
19	McClung and Harritt	.85	11.8
26	do	.75	8.9
June 2	do	.76	8.4
9	do	.94	14.8
16	do	.93	13.8
21	McClung and Ellis	.85	11.0
30	D. A. McClung	.92	12.4
July 8	F. C. Ebert	.90	13.3
1916.			
Apr. 13	F. C. Ebert	1.06	18.5
22	do	1.29	23
25	do	1.26	23
May 7	do	1.32	23.5
26	D. A. McClung	1.25	21.5
June 11	F. C. Ebert	1.22	21.5
July 17	do	.91	14
Dec. 15	W. J. Isbell	.69	6.5
1917.			
Feb. 14	F. C. Ebert	.50	3.3
Mar. 28	do	.70	6.5
Apr. 18	McGlashan and Ebert	.51	2.8
May 23	F. C. Ebert	.71	7.0
Nov. 7	D. A. McClung	.80	7.6
8	do	1.01	11.9
9	do	.54	3.4
10	do	.52	2.8
11	do	.59	3.7
Dec. 22	F. C. Ebert	.....	6.4
1918.			
Feb. 7	D. A. McClung	1.33	22
Mar. 9	F. C. Ebert	.....	23
May 7	do	.82	9.1
Aug. 22	do	.80	9.0
Sept. 7	D. A. McClung	.61	4.8

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1	.....	.....	.....	9.2	1.2	2.7	6.8	11.1	16.1	8.7	9.5	10.0
2	.....	.....	.....	9.5	.8	2.6	7.0	11.1	13.1	9.2	8.7	8.2
3	.....	.....	.....	12.2	.8	2.4	6.3	11.1	10.8	10.5	8.2	6.8
4	.....	.....	.....	10.0	.8	5.7	6.6	11.9	10.0	11.1	7.5	7.5
5	.....	.....	.....	7.7	1.5	4.5	6.6	10.0	6.6	10.8	7.5	10.0
6	.....	.....	.....	7.2	1.3	4.1	5.9	8.7	7.0	10.8	7.7	9.5
7	.....	.....	.....	7.0	1.2	4.1	6.3	8.7	7.0	10.8	7.2	9.2
8	.....	.....	.....	10.0	1.4	2.4	6.3	8.7	8.4	11.1	7.0	8.0
9	.....	.....	.....	5.3	1.5	2.4	5.9	8.7	9.5	10.5	6.3	8.2
10	.....	.....	.....	4.5	1.4	2.4	5.9	8.7	8.2	9.7	7.0	9.7
11	.....	.....	.....	2.2	1.5	2.3	5.9	11.6	8.7	9.7	8.4	9.7
12	.....	.....	.....	3.6	1.5	2.6	7.7	13.4	9.5	8.4	8.7	10.0
13	.....	.....	.....	4.6	3.7	2.9	7.7	12.5	11.6	8.2	9.7	10.0
14	.....	.....	.....	5.7	5.3	3.0	7.0	10.5	16.1	8.2	9.5	10.3
15	.....	.....	.....	3.0	5.0	2.7	6.8	10.0	8.2	9.7	9.5	10.3
16	.....	.....	.....	3.2	5.9	2.7	6.6	10.0	7.0	10.5	14.0	9.7
17	.....	.....	.....	3.6	5.7	2.7	6.3	9.7	8.2	10.5	10.0	10.0
18	.....	.....	.....	1.7	5.3	3.0	6.1	10.0	9.2	9.7	9.7	10.0
19	.....	.....	.....	1.9	3.9	2.7	5.9	10.0	8.7	8.7	9.7	10.3
20	.....	.....	.....	2.3	1.9	3.0	5.9	9.5	8.2	9.5	10.0	10.3
21	.....	.....	.....	2.6	1.9	4.1	5.9	10.0	9.2	9.7	10.5	9.2
22	.....	.....	.....	3.0	2.3	3.9	9.5	10.5	10.0	9.5	9.5	5.7
23	.....	.....	.....	2.4	1.9	3.6	11.1	11.4	9.5	9.5	8.2	6.1
24	.....	.....	.....	2.7	4.6	4.6	11.1	14.0	9.5	9.5	7.7	10.0
25	.....	.....	.....	1.4	6.8	3.6	11.1	14.3	8.7	9.5	7.5	10.0
26	.....	.....	.....	1.3	6.3	2.6	11.1	14.6	9.2	10.0	8.0	10.0
27	.....	.....	.....	1.8	4.8	3.2	11.1	14.9	9.2	10.0	9.5	9.7
28	.....	.....	.....	1.9	2.7	3.6	11.1	15.2	8.7	10.3	9.7	10.0
29	.....	.....	.....	6.1	.....	3.6	11.1	16.1	8.4	9.5	9.5	8.7
30	.....	.....	.....	4.3	.....	3.2	11.1	16.1	8.7	9.2	10.0	9.2
31	.....	.....	.....	1.4	.....	5.5	.....	16.1	.....	9.5	10.3	.....
1907–8.												
1	8.4	4.5	5.9	4.5	11.1	2.9	4.6	11.1	8.0	7.5	8.7	7.7
2	8.4	3.6	2.3	4.3	11.1	2.9	4.8	12.5	6.6	7.7	8.7	6.8
3	9.2	4.5	4.3	3.9	13.4	3.2	4.8	12.5	6.6	7.7	9.2	7.2
4	8.4	4.3	2.6	3.9	5.7	2.7	7.0	11.9	6.3	7.2	8.2	8.2
5	8.0	4.1	6.3	3.9	7.2	2.0	6.6	11.4	6.1	6.6	7.2	7.7
6	7.7	3.2	2.4	3.7	7.7	1.9	6.6	11.1	6.3	6.8	7.7	6.3
7	8.2	3.9	7.2	2.4	8.2	1.9	7.0	10.8	5.9	6.8	6.1	5.9
8	7.5	4.6	7.0	2.2	8.7	1.9	8.7	10.5	5.9	7.2	6.8	6.1
9	6.3	4.6	1.7	2.3	8.7	1.8	9.2	10.3	5.9	8.0	7.7	7.2
10	6.8	2.3	.6	2.3	5.9	1.8	8.7	10.3	5.9	8.2	7.7	7.7
11	6.8	4.6	.9	3.9	5.7	2.4	8.7	10.3	7.0	8.4	4.1	6.3
12	6.6	4.3	1.5	4.3	5.5	4.5	11.1	11.1	8.2	8.0	1.8	6.3
13	6.1	3.7	.6	5.9	6.8	4.5	11.1	11.6	7.7	8.0	3.0	5.0
14	6.3	2.0	.7	5.9	2.4	4.5	11.1	10.8	6.6	8.2	7.5	6.1
15	9.2	.2	3.6	5.5	2.0	4.3	10.5	10.3	6.3	8.2	7.7	7.2
16	8.4	.9	.4	5.7	3.9	4.1	10.5	9.7	6.8	8.4	5.7	8.2
17	7.0	1.7	.2	6.8	8.2	4.1	10.5	9.5	7.0	8.7	6.8	8.4
18	5.5	.4	.1	6.3	.0	4.3	10.3	8.4	7.5	7.7	7.2	8.4
19	5.3	1.2	.0	5.0	.0	4.3	9.5	7.5	7.5	7.0	7.5	8.7
20	5.7	.0	1.8	5.5	5.5	4.8	9.7	6.1	7.5	5.9	8.0	7.0
21	3.7	.0	2.2	7.0	5.5	4.1	10.5	7.5	7.0	5.9	7.7	6.8
22	5.0	.0	4.1	7.5	5.5	4.3	11.4	6.6	7.0	8.0	7.7	6.3
23	7.0	.3	1.7	8.2	5.5	4.1	9.2	6.8	7.2	8.2	7.5	8.4
24	5.7	6.1	1.7	9.7	5.5	3.9	10.5	5.7	6.8	7.7	7.2	9.7
25	6.3	6.8	3.6	11.1	5.5	2.4	11.4	5.9	7.0	8.0	7.5	6.3
26	6.8	6.8	.0	11.1	5.5	4.8	11.1	7.7	7.0	4.3	8.2	9.2
27	6.1	7.0	1.5	11.1	5.7	5.0	10.5	8.4	7.5	6.8	8.0	9.2
28	6.3	2.2	3.6	11.1	5.0	3.7	10.5	8.4	7.7	7.2	8.0	9.2
29	6.6	4.3	5.9	10.3	3.2	4.1	11.1	7.7	7.7	7.0	8.0	8.7
30	2.9	2.7	9.2	11.1	.....	4.8	10.8	7.7	7.5	7.2	8.0	8.0
31	3.2	.....	2.9	11.6	.....	4.8	.....	8.0	.....	8.4	8.2	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	7.0	5.9	5.3	5.4	13	0.0	3.6	12	10	5.2	5.4	7.7
2	8.0	5.5	4.6	6.0	4.6	.0	3.8	12	8.2	5.2	7.1	8.7
3	8.0	4.8	2.7	4.6	2.8	.0	2.5	12	8.4	5.6	8.0	7.1
4	7.5	5.0	.3	2.8	4.0	.7	5.2	12	7.3	6.6	8.0	5.2
5	7.2	5.5	1.9	2.3	3.3	.8	4.2	12	2.0	6.9	8.2	6.0
6	6.8	5.3	1.5	2.3	2.8	.0	4.2	12	.7	6.9	7.5	6.6
7	6.3	4.6	2.9	2.0	3.3	.0	5.2	13	8.0	8.0	5.8	9.4
8	6.1	4.3	5.5	2.1	5.0	.0	8.2	13	8.7	8.0	5.8	11
9	5.9	4.5	5.5	3.0	4.0	4.8	8.4	13	8.4	7.1	6.9	9.4
10	7.7	4.8	4.6	5.4	2.1	2.0	8.4	13	8.2	6.9	8.2	8.0
11	6.8	6.1	4.3	5.6	3.0	.9	8.2	12	7.5	7.5	8.0	8.2
12	6.8	6.1	3.2	5.6	3.6	.1	8.0	12	6.6	7.7	8.2	8.0
13	7.5	5.9	2.6	3.1	5.0	5.0	8.0	13	6.0	7.5	7.3	7.7
14	7.5	5.7	2.7	4.6	4.6	2.8	6.6	13	8.7	8.0	9.6	7.5
15	7.5	5.7	2.7	6.4	2.8	3.0	9.4	13	10	1.1	.3	6.9
16	8.0	5.7	2.6	8.2	.7	1.2	11	12	11	7.3	.0	6.6
17	7.7	5.5	3.6	9.6	3.0	1.0	11	12	10	7.3	.0	6.6
18	6.6	5.9	3.6	9.6	1.6	1.6	11	13	11	7.1	.0	6.6
19	4.6	6.3	2.7	8.4	.3	.0	12	13	11	7.1	6.6	6.6
20	5.3	5.9	2.0	7.3	.3	7.1	11	13	9.4	6.6	7.5	6.2
21	6.8	4.8	1.7	7.5	7.5	4.8	12	13	7.7	6.9	8.9	6.4
22	6.6	4.8	1.5	.6	.1	5.0	11	13	6.9	7.3	8.9	7.7
23	6.1	5.3	1.4	.9	.0	4.4	12	12.4	6.2	8.7	8.7	8.2
24	6.3	5.5	1.4	4.2	.0	6.2	12	13	6.0	11	9.6	8.2
25	5.7	2.6	1.2	7.1	.0	2.6	11	12	5.8	9.4	9.6	8.2
26	5.7	2.7	.8	11	3.0	3.1	11	12	6.2	7.7	9.6	7.5
27	6.1	5.3	.8	11	.0	4.8	12	11	6.2	8.0	8.9	6.2
28	6.3	5.5	.9	11	11	4.0	13	12	7.1	8.0	8.9	6.4
29	7.0	5.7	1.9	14	.....	1.8	13	12	8.0	7.3	7.1	5.8
30	7.2	5.5	2.2	14	.....	1.7	13	12	6.4	6.6	7.7	5.8
31	7.0	.....	3.6	15	.....	1.2	.....	11	.....	6.0	7.3	.....
1909–10.												
1	5.6	4.8	3.0	6.9	.0	.0	7.1	12.5	8.5	8.7	6.7	8.5
2	5.8	5.4	1.7	3.7	.0	.9	5.0	12.3	9.0	8.7	7.8	9.7
3	5.8	5.8	2.0	2.5	.0	.0	5.2	11.7	9.7	8.3	8.5	10.7
4	5.8	5.6	2.8	2.0	.0	7.4	2.4	10.9	9.9	8.0	8.5	9.5
5	5.8	5.4	3.0	1.6	.7	6.9	2.0	10.9	9.7	7.8	7.6	9.7
6	5.8	6.4	6.6	.2	4.2	4.8	1.8	11.4	9.5	9.7	8.3	4.8
7	5.6	6.5	8.0	.0	.0	.0	3.2	11.4	9.5	8.7	8.0	1.3
8	5.6	6.9	7.3	.0	.0	.0	6.7	10.7	8.5	7.6	7.6	8.5
9	6.4	6.9	5.2	.4	.2	.0	8.0	9.7	8.0	7.4	7.8	9.0
10	5.8	5.6	5.0	2.8	.0	4.0	4.2	9.5	6.4	6.4	8.3	10.2
11	5.8	4.2	7.7	5.0	.9	9.2	2.4	9.5	6.2	7.1	7.8	7.2
12	6.4	3.8	9.4	4.4	3.3	9.2	2.4	9.0	6.0	7.6	8.0	8.8
13	6.2	2.3	9.4	4.2	7.8	8.5	3.0	8.5	8.0	7.8	8.7	9.0
14	6.9	.8	9.6	4.0	3.2	2.0	5.2	8.7	9.0	8.5	7.8	9.0
15	7.3	4.6	9.9	5.0	2.8	.2	8.5	10.2	8.7	8.3	8.0	7.8
16	6.4	2.8	8.2	4.0	1.7	4.4	10.4	9.7	8.5	8.3	8.5	8.5
17	5.8	2.6	7.3	4.4	.7	8.0	10.2	8.0	8.3	7.6	8.7	8.0
18	5.8	1.6	7.5	3.5	.0	8.0	10.2	7.6	7.8	7.1	8.7	8.3
19	5.8	.7	7.1	3.0	.0	7.4	12.3	7.8	7.8	7.6	9.0	8.0
20	5.8	.8	7.7	3.0	.0	7.4	14.2	8.3	7.6	7.8	8.3	8.3
21	5.8	3.8	8.7	2.7	1.3	7.4	13.6	9.5	7.8	7.6	7.8	10.4
22	5.2	6.0	11	2.8	4.4	7.1	12.5	8.5	8.3	7.8	8.3	10.2
23	4.4	5.6	11	2.2	3.3	7.8	12.3	7.8	8.3	8.0	8.0	9.5
24	3.3	4.6	11	2.5	1.7	8.5	11.4	7.1	8.3	7.4	8.3	9.2
25	4.4	4.0	11	1.6	.0	7.1	12.0	6.7	8.7	8.0	6.7	8.0
26	6.4	5.6	9.9	.0	5.6	7.8	12.5	7.4	8.5	8.7	6.9	8.3
27	8.4	5.8	9.9	.0	5.4	4.0	12.5	7.4	8.3	8.5	6.9	9.0
28	8.2	7.1	9.6	.0	.8	.5	12.8	7.6	8.3	7.1	5.4	8.7
29	6.0	5.6	10	6.9	.....	2.1	12.5	7.6	8.0	6.4	5.4	8.0
30	5.0	5.4	11	2.2	.....	.0	7.6	8.3	7.8	6.0	7.1	8.0
31	5.0	.....	10	.0	.....	1.1	.....	9.5	.....	6.4	8.3	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	9.0	5.8	4.2	2.5	11.2	3.0	9.9	10.9	6.2	0.0	7.8	6.4
2	9.0	6.0	4.0	2.7	11.4	8.0	8.5	11.4	5.6	.0	8.3	6.7
3	10.2	5.8	4.8	2.5	9.5	3.2	12.2	11.7	3.2	.9	7.8	6.4
4	10.9	6.0	6.4	4.6	4.6	2.5	2.5	9.5	8.0	7.1	7.1	6.4
5	8.7	4.8	7.8	5.2	5.2	3.4	11.7	11.4	8.0	7.6	7.4	6.4
6	7.6	2.2	6.7	5.4	10.9	2.5	10.9	9.5	5.4	8.0	7.1	6.0
7	7.8	4.6	5.6	5.6	13.1	2.1	9.9	10.9	3.4	7.1	7.4	5.6
8	8.7	6.9	3.3	5.6	12.8	2.1	10.2	10.4	2.8	1.0	2.4	5.4
9	10.2	7.6	6.2	6.4	13.1	4.2	11.7	9.5	2.7	.0	.0	3.2
10	9.9	6.9	5.6	6.4	13.1	4.4	11.2	8.7	1.2	.0	.0	2.5
11	12.0	7.4	5.2	6.2	11.7	4.4	11.7	8.5	2.7	.0	.0	1.0
12	9.5	7.1	4.6	8.3	9.9	3.0	12.2	8.5	1.0	.0	.0	2.1
13	9.7	5.8	5.0	8.7	9.9	2.5	.0	7.8	1.3	.0	.9	2.2
14	9.7	5.6	4.8	7.8	11.4	1.5	.0	7.6	3.9	7.4	6.7	2.7
15	8.3	3.0	4.8	7.6	11.4	1.0	12.8	8.5	5.6	8.5	7.4	3.4
16	2.7	.6	5.0	9.5	10.9	5.4	13.3	8.5	6.4	7.4	7.8	3.9
17	.0	.4	5.4	9.5	9.0	9.0	13.6	7.8	7.6	5.0	8.5	3.9
18	.9	2.8	5.4	8.7	10.9	7.8	14.8	7.1	7.4	4.8	9.0	3.5
19	5.4	4.8	5.8	6.9	10.9	7.4	15.3	6.9	1.0	4.6	8.5	3.2
20	5.4	5.4	7.8	5.4	10.9	7.4	15.6	5.6	.0	5.8	7.6	2.5
21	7.6	5.2	5.8	4.4	11.4	7.1	11.7	4.4	.0	7.6	5.6	1.3
22	8.5	5.2	2.3	3.9	10.9	8.0	12.2	2.5	.0	8.5	3.0	1.5
23	5.0	4.4	1.8	3.2	10.4	6.9	14.8	4.4	2.8	1.7	1.2	2.0
24	4.2	3.2	3.9	4.2	10.4	4.8	15.0	8.0	7.4	.0	1.3	2.4
25	6.9	3.0	5.2	6.7	8.0	6.7	13.1	8.5	7.6	.0	1.8	.0
26	7.4	5.0	5.8	8.0	1.0	7.1	13.3	9.0	8.0	.0	3.2	.3
27	6.7	5.8	4.6	10.2	1.2	7.6	12.8	9.5	8.3	.0	6.7	.1
28	5.8	4.6	4.2	8.5	3.0	8.7	8.3	9.5	1.8	.0	7.1	.0
29	6.2	4.6	4.6	9.5	.....	10.2	10.9	7.6	.0	1.0	6.9	.3
30	5.6	4.4	4.8	10.4	.....	10.9	10.9	5.8	.0	6.2	5.8	.1
31	6.0	.....	3.2	10.2	.....	11.4	.....	6.0	.....	7.4	6.7	.....
1911–12.												
1	.0	.0	.0	.6	1.0	2.0	14.4	11.4	14.2	8.7	5.6	2.7
2	.0	.0	.0	.2	1.0	5.0	14.4	5.0	13.1	7.6	4.6	3.9
3	.0	.0	.0	.2	1.0	5.8	13.6	7.4	12.0	7.4	7.6	4.4
4	.1	.0	.0	.0	1.0	6.4	12.8	13.6	10.9	7.8	8.0	4.2
5	.0	.0	.0	.0	1.0	9.0	14.4	12.8	10.7	7.6	8.5	3.9
6	.1	.0	.0	.2	.9	9.7	13.6	15.0	10.7	6.4	8.7	2.5
7	.0	.0	.0	.0	.9	8.0	14.2	13.1	10.2	8.3	8.0	2.1
8	.0	.0	.0	.0	1.0	5.4	16.1	12.0	9.5	10.2	8.3	2.2
9	2.2	.0	.0	.0	1.0	6.4	15.0	10.9	9.0	6.4	3.9	2.2
10	.0	.0	.0	1.5	1.1	4.4	15.0	10.7	9.7	7.6	8.0	3.2
11	.0	.0	.0	.0	1.1	11.2	14.4	5.8	9.5	7.6	8.7	2.1
12	.0	.0	.0	.6	1.0	11.7	12.2	5.6	9.0	8.0	8.5	1.6
13	.0	.0	.0	1.0	1.0	10.9	8.5	5.2	8.0	8.5	4.6	2.0
14	.0	.0	.0	.0	1.0	13.9	8.5	8.5	8.5	8.5	4.0	2.7
15	.0	.0	.0	3.0	1.0	14.4	9.7	10.4	8.5	8.3	5.8	2.1
16	.0	.0	.0	.1	.9	14.4	12.8	6.7	7.6	7.1	7.1	2.5
17	.0	.0	.0	.4	.9	12.2	12.5	12.5	6.4	7.4	6.7	2.8
18	.0	.0	.0	2.7	.9	13.9	12.2	15.3	3.9	6.7	7.4	3.2
19	.0	.0	.0	1.5	.9	13.9	13.1	15.3	5.6	7.4	7.6	2.8
20	.0	.0	.0	.8	1.3	13.6	13.1	15.0	7.1	8.5	7.6	2.5
21	.0	.0	.0	.8	1.8	13.3	12.8	15.6	8.0	7.6	5.2	2.2
22	.0	.0	.0	.8	1.5	13.9	8.0	14.7	10.4	8.0	4.2	2.2
23	.0	.0	.0	.6	1.1	13.3	8.5	15.3	10.7	7.8	2.0	3.2
24	.0	.0	.0	.3	1.3	11.4	14.4	12.8	11.2	8.5	1.5	2.7
25	.0	.0	.0	1.1	1.1	12.5	14.2	14.4	10.4	7.8	8.0	2.7
26	.0	.0	.0	1.0	1.0	12.2	14.7	14.4	9.0	6.2	7.8	2.7
27	.0	.0	.0	1.1	1.1	11.7	14.7	14.2	9.0	5.6	1.1	2.8
28	.0	.0	.0	1.7	1.0	13.3	14.4	13.9	9.5	6.9	.0	2.7
29	.0	.0	.7	1.5	1.0	13.9	15.0	13.9	10.2	8.0	.0	2.5
30	.0	.0	3.0	1.6	.....	14.7	14.7	14.7	11.7	8.0	.4	2.5
31	.0	.....	.4	1.0	.....	13.3	.....	14.4	.....	6.7	2.2	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	1.4	2.6	2.1	2.8	2.8	8.2	8.4	7.5	3.3	5.8	3.5	2.8
2	2.1	2.5	1.6	2.3	2.5	8.0	8.4	7.1	4.8	5.4	3.3	2.0
3	2.1	2.6	1.6	2.0	2.3	6.9	10	4.0	3.5	5.4	2.8	1.4
4	2.3	2.0	2.3	2.0	2.1	6.4	9.9	3.6	4.4	4.2	2.5	2.5
5	8.7	2.1	2.8	1.7	5.0	7.3	9.9	4.4	4.0	5.8	2.6	1.3
6	10	3.1	2.5	.0	2.6	8.9	14	4.0	3.5	3.5	2.8	.7
7	11	3.3	2.8	.0	3.6	9.1	9.1	4.0	3.1	3.6	2.1	2.1
8	8.7	2.5	2.3	.1	4.0	9.6	9.1	3.6	3.0	4.4	1.8	2.8
9	5.6	2.8	2.0	.2	4.2	9.1	9.1	3.5	2.8	5.4	2.5	3.0
10	3.1	3.0	1.8	.2	4.6	8.9	8.9	4.0	4.0	5.4	2.1	1.8
11	1.2	3.0	1.8	.2	5.8	9.6	8.4	4.2	3.6	5.2	2.3	.8
12	.2	3.1	2.0	6.9	5.6	8.9	16	4.4	4.2	5.8	2.5	2.1
13	2.0	2.6	2.3	6.6	5.6	8.2	9.1	4.4	5.0	6.0	2.1	2.5
14	2.0	2.6	2.1	6.0	6.0	9.9	11	4.6	5.0	5.8	2.1	2.3
15	4.2	2.5	2.3	4.2	5.6	9.6	12	4.4	5.6	5.8	2.0	2.5
16	2.5	2.5	2.1	4.8	4.8	2.5	11	4.0	6.0	6.0	2.3	2.1
17	4.2	3.0	2.3	7.3	3.5	10	12	2.6	6.0	6.6	2.3	1.8
18	3.6	2.5	2.5	7.5	3.5	12	13	2.6	5.6	6.4	2.3	1.4
19	3.3	2.1	2.3	7.5	3.5	13	13	2.0	3.6	6.2	2.8	2.0
20	4.2	2.1	2.5	6.9	3.3	14	13	2.0	3.5	6.4	3.0	2.0
21	4.0	2.1	2.1	7.1	3.5	11	13	2.0	4.0	5.2	3.5	2.0
22	4.2	2.0	2.3	5.4	4.4	8.7	13	1.8	5.4	4.4	3.1	1.6
23	4.0	2.0	3.0	7.1	7.7	10	9.9	2.0	7.1	4.0	2.6	2.1
24	3.6	2.0	2.8	6.4	7.1	11	7.5	2.0	6.4	3.5	2.5	1.8
25	4.0	2.8	3.1	6.2	8.7	9.4	10	2.1	6.2	3.3	2.5	2.0
26	4.2	2.6	.7	4.6	7.7	10	7.7	2.8	6.4	2.6	2.1	1.6
27	2.3	2.1	2.8	4.0	8.7	10	7.7	2.6	6.0	2.6	2.5	1.6
28	2.5	2.0	2.5	3.3	8.2	11	6.4	2.8	7.3	2.8	3.1	1.4
29	2.3	2.0	2.3	4.0	.....	11	5.2	3.1	6.6	4.0	2.8	1.4
30	2.1	2.1	2.3	3.0	.....	11	6.9	2.8	5.8	3.6	3.3	1.3
31	2.5	.....	3.0	2.8	.....	11	.....	2.6	.....	3.8	3.6	.....
1913–14.												
1	2.0	.....	.....	.....	1.6	15.1	16.0	16.3	6.2	.0	5.0	5.2
2	1.8	.....	.....	.....	1.3	16.0	16.6	16.9	6.2	.0	4.8	5.4
3	.4	.....	.....	.....	1.2	16.0	15.4	16.9	6.2	.0	3.8	5.2
4	.7	.....	.....	.....	.9	15.7	15.7	16.6	5.8	.0	3.8	5.2
5	.8	.....	.....	.....	3.0	16.3	16.3	16.3	5.6	.0	5.8	4.8
6	.7	.....	.....	.....	7.7	16.0	16.6	15.4	5.6	.0	4.6	4.8
7	.9	.....	.....	.....	10.0	15.7	16.3	14.0	5.6	.0	5.0	4.8
8	.7	.....	.....	.....	10.5	15.7	16.6	11.8	5.8	.0	5.8	4.8
9	.2	.....	.....	.....	11.5	15.7	15.4	12.3	7.5	.0	5.0	4.8
10	.2	.....	.....	.....	11.5	15.7	15.7	15.7	8.1	4.8	4.0	3.3
11	1.4	.....	.....	.....	12.3	16.0	15.7	14.2	6.8	2.4	4.4	3.8
12	.7	.....	.....	.....	12.6	16.0	15.7	12.6	3.5	3.5	3.3	4.0
13	.4	.....	.....	.....	12.1	16.0	15.1	13.4	5.0	6.0	3.8	3.5
14	.5	.....	.....	.....	12.3	16.6	14.0	12.3	5.0	6.0	4.4	3.3
15	.7	.....	.....	.....	12.6	17.2	13.4	12.1	4.2	3.7	5.0	3.5
16	1.0	.....	.....	.....	10.3	16.9	12.9	11.5	4.2	6.8	5.0	3.8
17	1.0	.....	.....	.....	11.5	16.6	12.4	11.8	2.8	6.2	5.0	3.8
18	1.4	.....	.....	.....	11.5	16.6	11.8	12.1	.8	5.2	5.0	3.7
19	1.0	.....	.....	.....	10.5	16.9	10.8	11.3	.5	5.2	3.7	3.5
20	.9	.....	.....	.....	6.0	16.9	6.6	9.0	.0	5.4	4.4	3.5
21	1.6	.....	.....	.....	13.7	17.5	8.6	9.0	.0	5.2	5.0	3.2
22	.5	.....	.....	.....	3.3	17.2	12.9	8.4	.0	5.0	5.0	3.2
23	.0	.....	.....	.....	10.5	17.2	14.0	8.8	.0	6.0	5.0	3.3
24	.0	.....	.....	.....	13.7	17.5	17.2	8.4	.0	4.8	4.0	3.5
25	.0	.....	.....	.....	13.2	17.8	18.4	8.4	.0	5.0	4.2	3.5
26	.0	.....	.....	.1	15.4	17.5	17.2	8.8	.0	4.8	4.6	3.3
27	.0	.....	.....	.3	14.8	17.2	18.7	8.6	.0	4.8	4.8	3.2
28	.0	.....	.....	.5	15.1	18.1	17.8	8.4	.0	4.6	4.8	2.8
29	.0	.....	.....	1.0	.....	18.1	18.1	7.7	.0	5.0	5.0	2.8
30	.2	.....	.....	4.0	.....	15.4	15.7	7.0	.0	5.0	3.8	3.0
31	.....	.....	.....	2.1	.....	14.6	.....	6.6	.....	5.0	4.4	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	3.3	2.8	.....	3.3	18.5	18	18	10	8.5	13	10	1.4
2	3.5	3.0	.....	3.9	19.5	18	18.5	9.5	8.7	13.5	8.0	10
3	3.8	2.8	.....	2.3	6.3	18	18.5	10	8.6	9.5	8.0	7.5
4	6.3	3.5	.....	2.5	4.7	18	18	10.5	10.5	8.5	9.8	8.5
5	2.5	4.8	.....	3.0	15.5	18	18	5.2	13	8.0	9.2	9.0
6	2.5	3.8	.....	3.2	12	18.5	18	6.9	12	9.0	8.2	7.2
7	2.8	3.8	.....	3.0	16.5	18.5	18	9.6	14	8.5	8.0	11
8	2.5	3.8	.....	2.8	21	18.5	18	14	16	11.5	8.0	8.8
9	1.6	4.6	.....	2.1	21	18	18	19.5	15	12.5	8.5	7.2
10	1.8	4.6	.....	2.2	17.5	18	18.5	22	15	14	10	9.0
11	1.8	3.8	.....	2.0	.2	17	18.5	22	16	13.5	9.8	9.0
12	1.8	5.0	.....	2.2	.0	16.5	18.5	22	15	13	9.2	9.0
13	1.8	2.3	.....	2.1	.0	16	19.5	22	12	9.5	8.8	9.0
14	1.8	1.5	.....	2.2	.0	15	20.5	22	12	11	7.2	1.9
15	1.8	1.0	.....	2.3	.0	14	21.5	22	14.5	10.5	7.7	1.5
16	2.0	1.3	.....	2.1	.0	17.5	21.5	22	14	9.5	7.0	1.9
17	2.0	1.5	.....	2.3	.0	18.5	21.5	19	14	11	7.2	1.9
18	2.0	.3	.....	2.3	1.5	18.5	21.5	16	15	8.0	5.5	6.0
19	2.0	.....	.....	2.1	3.4	18.5	22	12	14	8.2	6.8	5.1
20	2.0	.....	.....	1.5	17	18.5	22	8.2	12	8.5	7.0	5.1
21	2.0	.....	.....	1.6	11.5	21	20.5	5.5	11	8.0	7.2	6.5
22	2.1	.....	.....	3.9	16.5	20	10.5	5.5	11.5	8.0	6.8	6.5
23	2.2	.....	.....	13	18	19	10.5	6.9	13	7.5	6.0	6.2
24	2.0	.....	3.3	16.5	20.5	18	10	8.7	13	9.0	4.9	7.0
25	2.0	.....	4.1	16.5	20.5	18.5	10	6.9	13	12	6.5	7.0
26	2.0	.....	4.6	14.5	20.5	19.5	15	9.2	11	10	8.8	7.5
27	1.8	.....	3.3	17	20.5	18.5	10	9.0	10	10	6.0	6.2
28	1.8	.....	3.8	12.5	18	18	9.4	9.1	10	10	5.8	3.9
29	1.8	.....	3.8	7.5	.....	18	8.1	9.7	10	9.8	5.8	4.3
30	1.8	.....	4.1	9.7	.....	18.5	12	9.6	14	9.2	7.0	4.3
31	2.8	.....	3.7	14	.....	18.5	.....	9.5	.....	9.8	7.2	.....
1915–16.												
1	6.0	5.1	4.5	1.4	.....	.....	5.5	22.5	19	16	9.0	7.0
2	6.8	6.0	4.9	2.3	.....	.....	12	19	18.5	12.5	7.2	4.5
3	7.0	6.0	7.2	3.9	.....	.....	12.5	20.5	19	11	7.2	3.9
4	7.0	6.0	7.8	10	.....	.....	13	22	20	11.5	8.0	4.9
5	7.0	6.0	8.8	7.8	.....	.....	14	23	19.5	12.5	6.8	7.8
6	7.2	7.5	7.2	3.9	.....	.....	14	24	18	9.5	6.5	7.5
7	7.2	8.5	6.5	3.2	.....	.....	14	24	15	11	6.8	5.1
8	7.2	4.5	6.5	2.3	.....	.....	14.5	24	19.5	11.5	7.0	5.3
9	7.0	3.0	6.0	2.6	.....	.....	14.5	23	20	10	7.8	5.8
10	7.5	5.3	10	2.6	.....	.....	17.5	24	21	10	7.0	7.0
11	7.5	3.2	11.5	3.9	.....	.....	21	24	21.5	9.2	6.5	7.5
12	7.0	4.1	9.5	3.7	.....	.....	21	24	20	10	6.2	7.2
13	7.0	3.9	3.2	3.9	.....	.....	19.5	23.5	20.5	10	6.0	7.0
14	7.5	3.4	5.1	6.0	.....	1.7	23.5	23.5	19.5	13	7.2	7.0
15	7.5	3.4	5.1	9.5	.....	3.7	23.5	23.5	13.5	15	6.5	7.0
16	7.0	3.5	2.6	10	.....	3.9	23.5	23	19.5	17	6.5	6.8
17	6.5	3.4	2.3	1.6	.....	4.3	22.5	23	15.5	12.5	7.0	7.8
18	7.5	3.4	1.8	.0	.....	4.3	24	23	14.5	10	7.8	8.8
19	3.5	3.5	1.8	.0	.....	4.3	20.5	22.5	21	10	9.2	9.2
20	5.1	3.5	1.7	.0	.....	4.3	21	22.5	20	10	9.5	14.5
21	3.5	4.9	1.9	.0	.....	5.1	22.5	22.5	21	10	9.5	13.0
22	6.0	5.1	2.4	.0	.....	5.1	21.5	22	22.5	9.0	6.8	14.0
23	6.0	4.9	1.4	5.5	.....	4.3	22	22	21	8.0	6.0	11.5
24	6.0	4.9	1.4	5.5	.....	1.5	21.5	22	17.5	8.0	6.5	8.0
25	6.0	4.9	2.9	5.3	.....	4.3	21	22	17.5	8.5	5.3	12.0
26	6.0	4.7	2.9	3.2	.....	5.1	18.5	22	17.5	7.5	14.5	12.5
27	6.0	4.7	7.0	.0	.....	5.1	21	20.5	17.5	6.8	9.5	12.5
28	6.0	4.7	6.5	.0	.....	5.1	22	20	17.5	6.0	8.2	11.5
29	5.1	4.7	1.9	.0	.....	4.9	22	20	18	6.5	7.0	11.0
30	5.1	4.7	2.8	.0	.....	4.9	23	19.5	17.5	6.5	6.5	14.0
31	5.1	.....	1.7	.0	.....	4.9	.....	19	.....	7.5	5.8	.....

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Daily discharge, in second-feet, of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	13.5	5.9	5.7	7.6	1.9	2.2	7.4	5.9	5.2	9.5	11	5.9
2	11	5.9	6.2	7.4	1.2	2.1	5.5	6.2	5.2	11	10.5	5.9
3	2.6	6.1	5.7	7.0	1.7	2.1	5.2	6.2	5.2	7.8	10	6.1
4	5.7	7.2	5.7	2.2	1.8	2.1	5.5	6.4	5.2	8.4	10	5.7
5	2.8	5.7	5.7	5.0	3.6	3.2	5.5	5.9	5.0	8.0	8.4	5.5
6	5.5	6.6	5.9	7.0	3.0	5.2	5.7	7.2	5.0	8.0	8.0	6.1
7	3.8	6.6	5.7	7.0	3.3	3.3	5.5	5.9	5.2	9.5	8.7	5.7
8	5.5	6.6	5.2	7.0	3.8	4.0	5.5	6.2	5.0	9.3	6.8	5.5
9	5.9	6.4	4.8	8.0	3.9	5.7	5.9	6.8	5.2	8.0	6.1	5.4
10	4.4	5.9	7.4	7.8	3.9	4.6	6.2	6.6	5.2	7.6	5.7	5.2
11	4.5	6.1	4.0	8.8	3.4	9.9	5.3	6.4	5.5	6.3	5.9	5.4
12	5.2	6.2	4.5	8.6	3.6	4.5	5.2	6.4	5.7	5.9	5.7	4.8
13	4.4	6.1	3.6	2.4	3.4	4.4	5.5	6.6	5.7	8.4	5.9	5.0
14	4.5	6.2	4.6	3.3	3.3	4.5	5.2	6.6	7.2	9.3	6.4	4.3
15	5.2	5.9	5.5	3.8	3.8	4.5	2.9	6.4	13	9.1	6.3	5.4
16	5.2	5.9	5.9	5.2	3.4	4.5	4.2	6.1	13.5	8.2	6.4	5.2
17	4.4	6.1	5.0	2.8	3.4	4.6	1.9	5.9	9.3	8.0	6.1	5.5
18	5.2	6.1	4.6	1.3	2.8	4.6	2.7	7.6	8.4	8.0	5.9	5.4
19	3.3	6.1	5.3	3.8	2.1	4.8	2.8	5.5	8.7	6.8	5.4	5.4
20	3.2	6.4	5.3	4.4	2.0	5.0	2.8	5.9	8.2	6.8	5.4	5.5
21	3.4	6.6	5.9	4.5	2.0	4.5	2.6	6.8	7.2	7.4	5.0	5.7
22	3.6	6.2	6.6	4.4	3.2	3.3	3.3	6.6	7.0	8.4	5.9	5.5
23	5.5	6.4	5.9	4.4	2.3	3.3	4.0	6.8	6.4	10	6.4	5.5
24	6.1	6.1	6.2	2.3	1.9	3.3	3.8	7.2	5.5	9.3	6.6	6.3
25	5.7	6.2	3.0	2.1	2.5	3.2	4.0	7.2	5.4	9.5	6.4	6.1
26	6.1	6.4	3.4	2.0	2.4	2.9	4.0	7.4	5.2	9.5	6.1	6.4
27	5.7	6.4	5.5	2.0	2.3	5.0	4.0	5.7	4.0	8.0	5.9	5.5
28	3.4	5.5	6.1	3.0	2.2	6.4	4.0	5.3	6.4	9.3	6.4	5.9
29	5.7	5.7	7.4	2.8	.....	7.6	4.8	5.3	7.2	10	6.1	5.7
30	5.7	5.5	7.4	2.5	.....	7.8	5.7	5.7	8.4	10	6.1	5.7
31	5.7	.....	7.2	2.6	.....	7.8	.....	5.5	.....	.0	6.3	.....
1917–18.												
1	5.9	3.7	.....	3.9	5.9	12.5	22	12	7.6	5.5	7.2	8.6
2	5.9	6.6	.....	3.4	5.0	10	22	11.5	7.4	5.5	7.8	8.4
3	5.9	6.6	.....	3.9	10	9.3	22	11	5.3	7.2	8.0	6.4
4	5.7	5.9	.....	3.8	11.5	8.8	22	9.5	4.4	6.8	8.0	5.2
5	5.7	3.9	.....	3.9	19	8.2	22	9.5	4.6	8.0	7.6	4.6
6	5.7	5.7	.....	4.4	23	8.2	19	9.7	5.3	8.4	7.0	4.6
7	5.7	5.7	.....	3.9	22	10.5	20	8.8	4.0	7.6	7.6	4.6
8	5.4	12	.....	4.0	22	22	20	8.8	3.4	8.0	7.6	4.8
9	5.7	3.9	.....	3.9	23	22	17.5	13.5	3.6	8.0	7.9	4.6
10	5.5	3.9	.....	4.0	24	23	19	15	6.2	8.0	8.2	4.0
11	5.7	4.8	.....	4.0	24	19	19	13	4.6	8.0	7.8	4.8
12	6.1	4.6	.....	2.6	24	12	19.5	12	5.0	8.6	7.6	6.1
13	6.4	4.8	.....	5.2	24	12	20	9.3	5.3	8.2	8.2	7.0
14	6.1	5.4	.....	11	24	22	21	8.4	5.0	7.8	8.4	8.0
15	6.3	3.2	.....	5.5	24	18	19	7.8	6.1	6.4	9.0	6.8
16	7.8	5.2	.....	2.1	25	6.1	17.5	8.2	6.4	6.4	9.7	6.8
17	7.6	4.4	.....	2.4	24	20	15.5	8.0	7.6	6.1	9.3	6.1
18	3.6	5.2	.....	3.0	25	20	13	8.8	6.2	5.5	8.2	5.3
19	3.6	5.2	.....	2.8	23	22	11	9.7	7.0	5.5	8.2	5.0
20	3.0	4.8	6.8	2.2	16	2.9	9.3	9.9	7.6	5.3	8.4	5.2
21	3.5	5.0	6.6	3.6	12.5	20	8.6	8.6	6.8	5.3	8.6	5.0
22	3.5	5.0	6.4	3.3	20	22	6.6	8.4	5.9	6.1	8.2	5.3
23	3.5	5.2	4.2	4.0	24	23	11.5	7.0	5.7	7.4	8.2	6.1
24	3.6	5.7	4.5	3.2	23	21	13	6.6	5.9	7.4	8.2	6.1
25	3.2	5.7	4.4	4.0	19.5	21	13	6.8	6.4	7.0	7.4	6.4
26	3.6	6.1	4.2	14	22.0	22	12	6.8	6.6	7.8	8.8	6.8
27	3.6	5.9	4.0	16.5	19.5	22	12.5	6.4	6.8	8.0	8.2	7.0
28	3.6	5.7	4.2	10.5	16.5	22	12.5	6.4	5.7	8.0	8.8	6.8
29	3.7	5.4	4.2	7.2	.....	22	15.5	9.9	5.7	7.0	8.2	6.2
30	3.9	5.4	4.2	5.9	.....	22	11.5	14	5.5	7.2	8.8	6.2
31	3.6	.....	4.2	5.9	.....	22	.....	8.8	.....	7.4	8.6	.....

NOTE. No water in flume Oct. 31, 1913, to Jan. 25, 1914. Discharge interpolated Apr. 17, May 1 and 11, 1914, as water-stage register was not in operation. Daily discharge Sept. 29–30, 1914, estimated. Oct. 1 and 2, 1914, discharge estimated. No record Nov. 19 to Dec. 23, 1914; Feb. 1 to Mar. 13, 1916; and July 31, 1917—probably no water in flume. Gage not read Aug. 9, 1918—discharge interpolated.

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Monthly discharge of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1907.				
January	12.2	1.3	4.62	284
February	6.8	.8	2.97	165
March	5.7	2.3	3.31	204
April	11.1	5.9	7.79	464
May	16.1	8.7	11.58	712
June	16.1	6.6	9.44	562
July	11.1	8.2	9.76	600
August	14.0	6.3	8.91	548
September	10.3	5.7	9.26	547
The period	.....	.....	.....	4,080
1907–8.				
October	9.2	2.9	6.63	408
November	7.0	.0	3.16	188
December	9.2	.0	2.79	172
January	11.6	2.2	6.38	392
February	13.4	.0	6.02	326
March	5.0	1.8	3.58	220
April	11.4	4.6	9.27	552
May	12.5	5.7	9.29	571
June	8.2	5.9	6.94	413
July	8.7	4.3	7.95	489
August	9.2	1.8	7.20	443
September	9.7	5.0	7.50	446
The year	13.4	.0	6.39	4,620
1908–09.				
October	8.0	4.6	6.76	416
November	6.3	2.6	5.22	311
December	5.5	.3	2.65	163
January	15	.6	6.47	398
February	13	.0	3.26	181
March	7.1	.0	2.28	140
April	13	2.5	9.00	536
May	13	11	12.4	762
June	11	.7	7.59	452
July	11	1.1	7.11	437
August	9.6	.0	6.89	424
September	11	5.2	7.35	437
The year	15	.0	6.43	4,660
1909–10.				
October	8.4	3.3	5.88	362
November	7.1	.7	4.57	272
December	11	1.7	7.79	479
January	6.9	.0	2.63	162
February	7.8	.0	1.71	95
March	9.2	.0	4.57	281
April	14.2	1.8	8.14	484
May	12.5	6.7	9.22	567
June	9.9	6.0	8.30	494
July	9.7	6.0	7.77	478
August	9.0	5.4	7.80	480
September	10.7	1.3	8.50	506
The year	14.2	.0	6.43	4,660
1910–11.				
October	12.0	0.0	7.27	447
November	7.6	.4	4.83	287
December	7.8	1.8	4.99	307
January	10.4	2.5	6.60	406
February	13.1	1.0	9.58	532
March	11.4	1.0	5.62	346
April	15.6	.0	11.0	655
May	11.7	2.5	8.25	507
June	8.3	.0	3.98	237
July	8.5	.0	3.47	213
August	9.0	.0	5.19	319
September	6.7	.0	3.05	181
The year	15.6	.0	6.13	4,440
1911–12.				
October	2.2	0.0	0.08	5
November	.0	.0	.0	0
December	3.0	.0	.13	8
January	3.0	.0	.78	48
February	1.8	.9	1.06	61
March	14.7	2.0	10.8	664
April	16.1	8.0	13.1	780
May	15.6	5.0	12.0	738
June	14.2	3.9	9.47	564
July	10.2	5.6	7.65	470
August	8.7	.0	5.54	341
September	4.4	1.6	2.73	162
The year	16.1	.0	5.29	3,840
1912–13.				
October	11	.2	3.81	234
November	3.3	2.0	2.47	147
December	3.1	.7	2.29	141
January	7.5	.0	3.97	244
February	8.7	2.1	4.89	272
March	14	2.5	9.49	584
April	16	5.2	10.1	601
May	7.5	1.8	3.47	213
June	7.3	2.8	4.86	289
July	6.6	2.6	4.80	295
August	3.6	1.8	2.62	161
September	3.0	.7	1.89	112
The year	16	.0	4.55	3,290
1913–14.				
October	2.0	.0	0.64	39
November	.0	.0	.0	0
December	.0	.0	.0	0
January	4.0	.0	.26	16
February	15.4	.9	9.66	536
March	18.1	14.6	16.5	1,010
April	18.7	6.6	14.9	887
May	16.9	6.6	11.7	719
June	8.1	.0	3.18	189
July	6.8	.0	3.56	219
August	5.8	3.3	4.59	282
September	5.4	2.8	3.88	231
The year	18.7	.0	5.71	4,130
1914–15.				
October	6.3	1.6	2.32	143
November	5.0	.0	1.81	108
December	4.6	.0	.99	61
January	17	1.5	5.68	349
February	21	.0	11.4	633
March	21	14	18.0	1,110
April	22	8.4	16.8	1,000
May	22	5.2	12.7	781
June	16	8.5	12.5	744
July	14	7.5	10.1	621
August	10	4.9	7.61	468
September	11	1.4	6.31	375
The year	22	.0	8.84	6,390
1915–16.				
October	7.5	3.5	6.35	390
November	8.5	3.0	4.71	280
December	11.5	1.4	4.74	291
January	10	.0	3.16	194
February	.....	.....	.....	.....
March 14–31	5.1	1.5	4.27	152
April	24	5.5	18.9	1,120
May	24	19	22.3	1,370
June	22.5	13.5	18.8	1,120
July	17	6.0	10.2	627
August	14.5	5.3	7.46	459
September	14.5	3.9	8.72	[illegible]

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Monthly discharge of Cuyamaca Water Co.'s flume near Lakeside, Calif., for 1907–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916–17.					1917–18.				
October	13.5	2.6	5.24	322	October	7.8	3.0	4.92	303
November	7.2	5.5	6.17	367	November	12	3.2	5.35	318
December	7.4	3.0	5.51	339	December	6.8	.0	1.87	115
January	8.8	1.3	4.61	283	January	16.5	2.2	5.11	314
February	3.9	1.7	2.79	155	February	25	5.0	19.8	1,100
March	9.9	2.1	4.55	280	March	23	2.9	17.0	1,050
April	7.4	1.9	4.55	271	April	22	6.6	16.2	964
May	7.6	5.3	6.33	389	May	15	6.4	9.49	584
June	13.5	4.0	6.64	395	June	7.6	3.4	5.79	345
July	11	.0	8.24	507	July	8.6	5.3	7.08	435
August	11	5.0	6.83	420	August	9.7	7.0	8.18	503
September	6.3	4.3	5.57	331	September	8.6	4.0	5.96	355
The year	13.5	.0	5.61	4,060	The year	25	.0	8.82	6,390

SOUTH FORK OF SAN DIEGO RIVER NEAR ALPINE, CALIF.

LOCATION.—In NE. ¼ sec. 10, T. 15 S., R. 2 E., in Capitan Grande Indian Reservation, about half a mile above junction with San Diego River, and 4 miles north of Alpine, San Diego County.

DRAINAGE AREA.—44.5 square miles (measured on topographic maps).

ELEVATION.—About 800 feet above sea level.

RECORDS AVAILABLE.—January 1, 1913, to September 30, 1915.

GAGE.—Sanders & Rising water-stage recorder on left bank about 100 feet below intake of South Fork flume. Vertical staff, fastened to outside of gage well, was read during practically the entire year 1914-15, as water-stage recorder was not operating satisfactorily.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge 1,500 feet below gage.

CHANNEL AND CONTROL.—Solid rock and gravel; rough; permanent.

EXTREMES OF DISCHARGE.—1913–1915: Maximum stage recorded, 5.0 feet during morning of February 11, 1915 (discharge, 242 second-feet); no flow during several months each year.

DIVERSIONS.—South Fork flume, which heads above the station, diverts water into Cuyamaca Water Co.'s flume.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curves fairly well defined. Water-stage recorder in operation only part of time; for such periods mean daily gage heights were determined by inspecting recorder graph; staff gage usually read once daily when water-stage recorder was not in operation. Daily discharge ascertained by applying mean daily gage height to rating table; discharge for periods when gage-height record was not obtained, estimated by comparison with records of flow at adjacent stations. Records fair.

Discharge measurements of South Fork of San Diego River near Alpine, Calif., for 1914–15.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Jan. 27	F. C. Ebert	3.80	129	Feb. 3	F. C. Ebert	2.30	[a] 38
28	do	2.10	25	6	do	.7	[b] 1
				Mar. 18	R. W. Day		0
				25	do		0

[a] Made by wading 2,000 feet below gage. [b] Estimated.

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Daily discharge, in second-feet, of South Fork of San Diego River near Alpine, Calif., for 1912–1915.

Day.	Feb.	Mar.	Sept.	Day.	Feb.	Mar.	Sept.	Day.	Feb.	Mar.	Sept.
1912–13.				1912–13.				1912–13.			
1		0.05		11				21			
2				12				22	10		
3				13			30	23	.1		
4				14			5.8	24	0		
5				15				25	0		
				16				26	.2		
7				17				27	.5		
8				18				28	.3		
9				19				29			
10				20				30			
								31			

Day.	Jan.	Feb.	Apr.	May.	June.	Day.	Jan.	Feb.	Apr.	May.	June.
1913–14.						1913–14.					
1				26		16	.3				
2				14		17	.3				
3				5.2		18	.3				
4				6.0		19	.1	42			
5				1.3		20		98			
6			0.7	1.3	0.05	21	.05	217			
7			1.0	.6	.05	22	.1	130	.7		
8			.7	.5		23	.05	60	8.5		
9			.7			24	.05	20	16		
10	0.05		.5			25		15	2		
11	.05		.4			26	14	10	3		
12			.3	.05		27	54	5	3		
13			.05			28	39	2.5	.7		
14						29	0.8		2		
15	.05					30	.6		16		
						31	4.5				

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1914–15.							1914–15.						
1		15	105		44	0.1	16		30	1.5		0.8	0.1
2		40	113		25	.1	17		40			.2	
3		35	71		9.5	.1	18		35			3.5	
4		5	39		24	.1	19		20			.4	
5		.7	24		146	.1	20		24			.2	
6		.5	21		71	.1	21	0.1	44				
7		.5	24		39	.1	22	.5	24				
8		.5	7.5	0.7	18	.1	23		24	.4	9.5		
9		.5	.5		14	.1	24		20	1.0	14		
10		4.4	6		9.5	.1	25		16	1.0	5		
11		217	3.5		3.5	.1	26		12	1.0	.5	.1	
12		75	4.5		1.5	.1	27		11	1.0			
13		50	3.5		.5	.1	28	.1	10	1.0			
14		40	2.5		.2	.1	29	20		1.0			
15		25	2.5		1.5	.1	30	146		1.0	44		
							31	24		.5			

NOTE.—Discharge determined from fairly well-defined rating curve.

Discharge Jan. 19 and 20, 1914, estimated. No gage-height record Feb. 22–27, 1914; discharge estimated by comparison with record of flow on San Diego River and from precipitation records.

No gage-height record Jan. 20, Feb. 1 and 2, 4, 6–9, 12–19, 24 and 25, 27 and 28, Mar. 26–29, Apr. 25, May 2, 16, 20, 1915; discharge estimated. Stream dry on days for which discharge is not given.

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Monthly discharge of South Fork of San Diego River near Alpine, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913–14.					1914–15.				
January	54	0	3.88	139	January	146	0	6.15	378
February	217	0	21.4	1,190	February	217	.5	29.3	1,630
March	0	0	0	0	March	113	0	14.1	867
April	16	0	1.88	112	April	44	0	2.46	146
May	26	0	1.77	109	May	146	0	13.3	818
June	.05	0	.003	.2	June	.1	0	.05	3
The year	217	0	2.41	1,650	The year	217	0	5.30	3,840

NOTE.—No flow in months for which discharge is not shown. Records represent full year.

SOUTH FORK OF CUYAMACA WATER CO.'S FLUME[1] NEAR ALPINE, CALIF.

LOCATION.—In NE. ¼ sec. 10, T. 15 S., R. 2 E., in Capitan Grande Indian Reservation, 100 feet below diversion dam, half a mile above mouth of South Fork of San Diego River, and 4 miles north of Alpine, San Diego County.

RECORDS AVAILABLE.—January 10, 1913, to September 30, 1915.

GAGE.—Sanders & Rising water-stage recorder on left side of flume 100 feet below intake. Vertical staff fastened to flume at same site is occasionally read.

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

CHANNEL AND CONTROL.—As gage is only a short distance above wasteway, the velocity depends largely on the position of the gate.

EXTREMES OF DISCHARGE.—1913–1915: Maximum mean daily discharge of flume, 28 second-feet May 10 and 11, 1915.

ACCURACY.—Stage-discharge relation not permanent owing to changes in opening of wasteway. Sufficient discharge measurements were obtained to define these changes. Mean daily gage heights determined by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating tables covering short periods and by shifting-control method. Records fair.

South Fork flume is a feeder for Cuyamaca Water Co.'s flume. When the water is not needed it is wasted into South Fork of San Diego River a short distance below gage in flume.

Discharge measurements of South Fork of Cuyamaca Water Co.'s flume near Alpine, Calif., for 1913–1916.

Date.	Made by	Gage height.	Discharge.	Date.	Made by	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Jan. 11	W. S. Post	0.16	0.8	Mar. 25	R. W. Day	0.60	8.1
16	do	.22	1.0	31	F. C. Ebert	.73	9.8
Feb. 16	F. C. Ebert	.17	.4	Apr. 7	R. W. Day	.60	8.4
26	E. W. Case	.85	12	14	do	.80	10.4
Mar. 15	F. C. Ebert	.50	5.5	22	do	.56	12.9
May 13	do	.19	.4	28	Day and McClung	.98	16.2
1914.				May 5	McClung and Harritt	.45	24
Jan. 27	F. C. Ebert	.60	7.9	12	do	1.50	27
28	do	.40	2.8	19	do	1.43	23
1915.				26	do	1.15	17.7
Feb. 3	D. A. McClung	1.20	8.7	June 2	do	.94	14.7
6	F. C. Ebert	.65	7.6	9	do	.78	10.2
7	do	.89	8.6	16	do	.67	8.3
18	R. W. Day	.70	10.2	23	do	.60	6.0
25	do	.97	9.7	30	D. C. McClung	.45	3.6
Mar. 4	do	.78	12.1	July 10	F. C. Ebert	.40	2.6
11	do	.18	23	1916.			
18	do	1.10	15.8	Dec. 12	F. C. Ebert		4.4

[1] Previously called South Fork of San Diego flume.

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Daily discharge, in second-feet, of South Fork of Cuyamaca Water Co.'s flume near Alpine, Calif., for 1913–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913.												
1				0.0	0.2	11.5	18	0.9	0.4			0.0
2				.0	.2	6.8	16.5	.8	.4			.0
3				.0	.2	5.8	13.5	.9	.5			.0
4				.0	.2	6.6	8.4	.6	.4			.0
5				.0	.2	8.2	5.6	.6	.3			.0
6				.0	.3	7.3	5.0	.5	.2			.0
7				.0	.3	5.8	3.7	.5	.1			.0
8				.0	.3	5.5	4.6	.5	.1			.0
9				.0	.4	5.3	3.4	.5	.1			.0
10				3.7	.4	4.8	3.9	.5	.1			.0
11				.2	.4	4.4	6.4	.5	.1			.0
12				.2	.3	13	7.0	.5	.1			.0
13				.1	.3	7.3	9.2	.5	.0			5.5
14				.1	.3	12	9.6	.4	.0			.2
15				.5	.3	5.1	5.1	.4	.0			.0
16				.9	.3	4.2	3.4	.3	.0			.0
17				.8	.3	5.5	3.6	.3	.0			.0
18				.4	.3	5.8	4.4	.3	.0			.0
19				.4	.3	5.8	4.0	.3	.0			.0
20				.3	.4	6.0	3.2	.3	.0			.0
21				.2	3.7	11	2.8	.3	.0			.0
22				.2	19	13.5	2.4	.3	.0			.0
23				.2	8.6	10.5	1.8	.3	.0			.0
24				.2	4.0	8.8	1.5	.3	.0			.0
25				.2	14	7.3	1.0	.3	.0			.0
26				.2	12.5	16.5	.9	.3	.0			.0
27				.2	15	18.5	.9	.3	.0			.0
28				.2	13	16	.9	.3	.0			.0
29				.2		9.4	.9	.3	.0			.0
30				.2		9.9	1.0	.3	.0			.0
31				.2		18		.3				
1913–14.												
1		0.0	0.00	.01	1.6	4.4	1.0	.8	.15			
2		.0	.00	.01	1.3	4.0	1.0	.6	.08			
3		.0	.00	.01	1.1	3.9	1.0	.8	.08			
4		.0	.00	.01	1.0	3.9	1.0	.8	.06			
5		.0	.00	.01	1.0	3.9	1.0	.6	.06			
6		.0	.01	.01	1.0	3.9	1.0	.6	.06			
7		.0	.01	.01	.8	3.9	1.0	.6	.15			
8		0	.01	.01	.6	3.3	1.0	.6	.2			
9		.0	.01	.01	.6	2.7	1.0	1.0	.2			
10		.0	.01	.06	.6	2.1	1.0	1.0	.15			
11		.0	.01	.06	.6	2.1	1.0	1.0	.08			
12		.0	.01	.06	.4	2.1	1.0	.9	.04			
13		3.7	.01	.04	.2	2.0	1.0	.9	.03			
14		.2	.01	.03	.08	1.8	1.0	1.2	.00			
15		.2	.01	.02	.08	1.8	1.0	1.5	.00			
16		.2	.01	.01	.08	1.8	.9	1.5	.00			
17		.2	.01	.00	.08	1.8	.9	1.4	.00			
18		.0	.01	.02	08	1.8	.6	1.0	.00			
19		.0	.01	.04	1	1.8	.5	.8	.00			
20		.0	.01	.00	15	1.8	.4	.5	.00			
21		.0	.01	.00	2.1	1.4	.4	.4	.00			
22		.0	.01	.00	5.1	1.0	.4	.4	.00			
23		.0	.01	.00	5.1	1.0	.4	.2	.00			
24		.0	.01	.5	3.4	.9	.6	.3	.00			
25		.0	.01	.08	.4	.9	1.0	.5	.00			
26		.0	.01	10.5	.6	.03	1.2	.5	.00			
27		.0	.01	26	3.0	.03	1.0	.5	.00			
28		.0	.01	3.7	3.7	.00	.8	.5	.00			
29		.0	.01	9.2		1.0	.5	.3	.00			
30		.0	.01	4.6		1.0	.4	.2	00			
31			.01	3.7		1.0		.2				

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Daily discharge, in second-feet, of South Fork of Cuyamaca Water Co.'s flume near Alpine, Calif., for 1912–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	.....	.....	.....	0.00	16	14	10.5	16	15	3.8	0.3	.....
2	.....	.....	.....	.00	18	12.5	10	19	15	3.6	.3	.....
3	.....	.....	.....	.00	19.5	15.5	10.5	20	14	3.7	.3	.....
4	.....	.....	.....	.00	15	14.5	8.0	24	14	3.5	.3	.....
5	.....	.....	.....	.00	11	20	8.1	24	13.5	3.4	.2	.....
6	.....	.....	.....	.01	8.9	20	8.2	25	13	3.3	.2	.....
7	.....	.....	.....	.01	8.4	21	8.4	26	12	3.0	.2	.....
8	.....	.....	.....	.01	6.4	22	7.2	27	10.5	2.7	.1	.....
9	.....	.....	.....	.01	6.8	23	7.0	27	9.5	2.3	.1	.....
10	.....	.....	.....	.01	8.4	23	6.8	28	9.6	2.1	.0	.....
11	.....	.....	.....	.03	16	22	6.4	28	9.8	1.3	.0	.....
12	.....	.....	.....	.05	15	23	6.0	27	9.1	.5	.0	.....
13	.....	.....	.....	.05	14	25	5.6	27	8.9	.5	.0	.....
14	.....	.....	.....	.05	13	19	6.7	24	8.8	.5	.0	.....
15	.....	.....	.....	.05	12	13	10.5	24	8.6	.4	.0	.....
16	.....	.....	.....	.05	11	13.5	10.5	24	7.9	.4	.0	.....
17	.....	.....	.....	.05	10	16	10	22	7.4	.3	.0	.....
18	.....	.....	.....	.05	10	14	11	22	6.8	.3	.0	.....
19	.....	.....	.....	.00	12	12.5	12	24	6.6	.2	.0	.....
20	.....	.....	.....	.00	14	11.5	13	21	6.2	.2	.0	.....
21	.....	.....	.....	1.0	15	12	13	19	5.9	.2	.0	.....
22	.....	.....	.....	3.7	12.5	13	13	18	5.7	.2	.0	.....
23	.....	.....	.....	.6	18	13.5	17	17.5	5.6	.2	.0	.....
24	.....	.....	.....	.4	14	12	16	17	5.6	.3	.0	.....
25	.....	.....	.....	.4	10	8.7	15	17.5	5.0	.4	.0	.....
26	.....	.....	.....	.2	19.5	9.0	16.5	17.5	4.6	.5	.0	.....
27	.....	.....	.....	1.8	16	8.8	16.5	17	4.0	.4	.2	.....
28	.....	.....	.....	1.9	13	9.2	16	16	3.5	.3	.1	.....
29	.....	.....	.....	2.0	.....	10	21	15	3.4	.3	.0	.....
30	.....	.....	.....	2.1	.....	10	22	15	3.4	.3	.0	.....
31	.....	.....	.....	15	.....	9.8	.....	14.5	.....	.3	.0	.....

NOTE.—No gage-height record Jan. 12 and 15, May 18–23, 25–30, June 1 and 2, 4–6, 8 10, 12 and 13, 1913; Dec. 14, 1913, to Jan. 9, 1914, and Feb. 1–6, 1914; Jan. 4 and 5, 11, 13, 15, 17, 20, and 21, 28, and 29, Feb. 1 and 2, 3, 12–17, 19, 24, 27, May 23 and 30, 1915; discharge estimated. Daily discharge for 1913 and 1914 computed from fairly well defined rating curves; for 1915, from fairly well defined rating curves covering short periods and by shifting-control method. Flume dry on days for which discharge is not given.

Monthly discharge of South Fork of Cuyamaca Water Co.'s flume at Alpine, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913.									
January 10–31	3.7	0.01	0.45	20	1913–14.				
February	19	.2	3.42	190	May	1.5	0.2	0.72	44
March	18.5	4.2	8.91	548	June	.2	.0	.045	2.7
April	18	.9	5.09	303	The year	26	.0	.575	415
May	.9	.3	.43	26	1914–15.				
June	.5	.0	.09	5	January	15	.0	.953	59
September	5.5	.0	.19	11	February	19.5	6.4	13.0	722
The period	.....	.....	.....	1,100	March	25	8.7	15.2	935
1913–14.					April	22	5.6	11.4	678
November	3.7	.0	0.15	9	May	28	14.5	21.4	1,320
December	.01	.0	.008	.5	June	15	3.4	8.43	502
January	26	.0	1.89	116	July	3.8	.2	1.27	78
February	5.1	.08	1.24	69	August	.3	.0	.07	4
March	4.4	.0	2.03	125					
April	1.2	.4	.86	49	The year	28	.0	5.93	4,300

NOTE.—Flume dry in months in which discharge is not given.

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SAN VICENTE CREEK AT FOSTER, CALIF.

LOCATION.—In sec. 31, T. 14 S., R. 1. E., at old diversion dam three-eighths of a mile above Foster, San Diego County.

DRAINAGE AREA.—74.9 square miles (measured on topographic maps).

ELEVATION.—About 500 feet above sea level.

RECORDS AVAILABLE.—February 2, 1914, to May 22, 1917 (discharge measurements). Daily discharge January 29 to April 4, 1915.

GAGE.—Vertical staff in two sections fastened to solid rock on right bank about 25 feet above dam.

DISCHARGE MEASUREMENTS.—Made from footbridge at Foster or by wading near gage.

CHANNEL AND CONTROL.—Sand, gravel, and rock. The concrete dam which formed the control was destroyed by flood of January, 1916.

EXTREMES OF DISCHARGE.—1915: Maximum stage reported, 6.5 feet February 11 (discharge, 1,190 second-feet); no flow for several months during the year. Maximum discharge, flood of 1916, occurred January 27 (discharge, 18,600 second-feet). See Water-Supply Paper 426, p. 55.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during 1915. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for periods covered by gage-height record.

Discharge measurements of San Vicente Creek at Foster, Calif., for 1914–1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Feb. 2	F. C. Ebert		1.8	Apr. 5	Lee and Sleppy	2.58	10
Mar. 4	do		12	9	R. W. Day	2.52	7.8
Apr. 23	do		3.5				
May 12	do		[a] .2	May 17	F. C. Ebert	2.80	28
				June 1	D. L. Lee	2.41	5.6
1915.				Dec. 9	F. C. Ebert		.05
Jan. 29	F. C. Ebert	3.71	148	21	H. D. McGlashan		.05
31	do	3.39	66				
Feb. 1	do	3.23	37	1916.			
2	do	5.35	[b] 723	Mar. 15	McGlashan and Ebert		33
3	K. B. Sleppy	4.00	[b] 237	Apr. 15	F. C. Ebert		16
4	F. C. Ebert	3.49	98	May 8	do		5.5
5	do		50	June 10	do		.4
8	do		27	July 17	Ellis and Ebert		.05
25	D. L. Lee	3.46	[b] 102				
Mar. 5	F. C. Ebert	3.44	90	1917.			
6	Ebert and Keenan	3.35	72	Jan. 22	F. C. Ebert		25
8	F. C. Ebert	3.30	66	Feb. 14	do		2.4
19	R. W. Day	3.00	28	19	do		26
26	do	2.78	15	Mar. 12	do		15
27	F. C. Ebert	2.73	15	28	do		4.2
29	do	2.80	16	Apr. 18	McGlashan and Ebert		15
30	R. W. Day	2.76	13	19	do		10
Apr. 2	R. W. Day	2.63	11	May 22	F. C. Ebert		1.4
4	W. E. Keenan	2.60	13				

[a] Estimated.
[b] Made from footbridge 2,000 feet below gage; all other measurements made by wading near gage.

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Daily discharge, in second-feet, of San Vicente Creek at Foster, Calif., for 1915.

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.
1		37	135	12	16		92	33	
2		723	178	11	17		94	30	
3		237	102	10	18		81	28	
4		98	90	10	19		74	25	
5		50	78		20		96	22	
6		40	71		21		89	20	
7		39	67		22		78	20	
8		27	61		23		69	19	
9		20	54		24		62	19	
10		438	62		25		104	16	
11		783	60		26		84	16	
12		332	49		27		64	15	
13		115	44		28		64	20	
14		89	39		29	148		18	
15		90	35		30	500		16	
					31	66		14	

NOTE.—Water began flowing between 11 and 12 o'clock on night of Jan. 28, 1915. No gage-height record Jan. 29 to Feb. 9; Feb. 15 and 16, 26; Mar. 18 and 19, 25, 27, 31, Apr. 2; no observations after April 4. Daily discharge Jan. 29 to Feb. 9 estimated from discharge measurements and by comparison with record of flow of San Diego River at Lakeside. For other periods for which gage heights are missing discharge was interpolated or estimated by comparison with record of flow at Lakeside.

Monthly discharge of San Vicente Creek at Foster, Calif., for 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
February	783	20	149	8,280
March	178	14	47	2,890
The period	783	14	88	11,200

MISCELLANEOUS MEASUREMENTS.

The following miscellaneous measurements have been made in the San Diego River basin:

Miscellaneous discharge measurements in San Diego River drainage basin.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
Mar. 7, 1918	San Diego River	1 mile above diverting dam and one-eighth mile below Cedar Creek.		7.8
Dec. 16, 1912	do	Just above mouth of Boulder Creek, 13 miles northeast of Lakeside, NE. ¼ NE. ¼ sec. 11, T. 14 S., R. 2 E.		1.1
Feb. 16, 1913	do	do		2.4
Mar. 16, 1913	do	do		15
May 13, 1913	do	do		2.4
Apr. 20, 1914	do	One-fourth mile above mouth of Boulder Creek.		4.4
May 13, 1914	do	do		7.3
Apr. 7, 1915	do	One-half mile above mouth of Boulder Creek.		22
July 10, 1915	do	do		4.6
Nov. 23, 1905	do	Diverting dam		1.9
May 1, 1912	do	Diverting dam just below junction of Boulder Creek, NE. ¼ NE. ¼ sec. 11, T. 14 S., R. 2 E.		22
Mar. 17, 1915	do	do		41
Mar. 24, 1915	do	do		26
Mar. 31, 1915	do	do		23
Apr. 7, 1915	do	do		9
Mar. 31, 1915	do	Capitan Grande dam site, three-eighths mile below mouth of Chocolate Creek, and about 5 miles northeast of Lakeside.		52
Apr. 2, 1915	do	do		33
Apr. 14, 1915	do	do		20
May 1, 1912	do	About 2½ miles east of San Diego		39
May 4, 1912	do	do		34
May 20, 1912	do	do		25

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Miscellaneous discharge measurements in San Diego River drainage basin—Continued.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
May 25, 1912	San Diego River	About 2½ miles east of San Diego		13
June 6, 1912	do	do		a 1
Aug. 18, 1912	do	do		.0
Nov. 7, 1917	Boulder Creek	Mouth	0.56	5.6
Nov. 9, 1917	do	do	.36	1.8
Feb. 8, 1918	do	do	.80	19
Mar. 7, 1918	do	do	.43	4.4
Apr. 2, 1913	Cuyamaca Water Co.'s flume.	Sand Creek crossing, in NE. ¼ sec. 22, T. 14 S., R. 2 E.		40
Feb. 16, 1917	do	South Fork of San Diego River		3.2
Nov. 9, 1917	do	do	.54	3.5
Nov. 10, 1917	do	do	.81	8.5
Feb. 8, 1918	do	do	1.52	22
Apr. 14, 1916	do	Just below South Fork feeder	1.37	26
Aug. 16, 1912	do	115 feet below section house, Chocolate Creek, about 8 miles east of Lakeside, in SW. ¼ sec. 8, T. 15 S., R. 2 E.	.60	7.1
Aug. 20, 1912	do	do	.50	5.1
Oct. 16, 1914	do	Cuyamaca Water Co.'s gaging station just below Chocolate siphon.	.25	1.6
Oct. 17, 1914	do	do	.29	2.0
Jan. 28, 1915	do	do	.90	11.6
Feb. 6, 1915	do	do	.90	12.1
Feb. 10, 1915	do	do	1.12	16.8
Mar. 31, 1915	do	do	1.20	19.6
Apr. 7, 1915	do	do	1.20	19.1
Apr. 14, 1915	do	do	1.30	22
Dec. 12, 1916	do	do	.62	4.6
Nov. 7, 1917	do	do	.84	7.4
Nov. 8, 1917	do	do	1.08	12
Nov. 9, 1917	do	do	.56	3.6
Nov. 10, 1917	do	do	.96	9.5
Feb. 8, 1918	do	do	1.51	23
Oct. 17, 1914	do	Above inflow from El Monte pump		1.58
Do	do	Below inflow from El Monte pump		1.99
Apr. 3, 1915	do	Grossmont	1.00	16.4
Apr. 21, 1916	do	do		20
Feb. 15, 1917	do	do	.35	1.7
Nov. 1, 1917	do	do	.38	1.5
Nov. 7, 1917	do	do	.66	4.9
Nov. 8, 1917	do	do	.90	9.3
Nov. 9, 1917	do	do	.44	2.2
Nov. 10, 1917	do	do	.35	1.3
Feb. 7, 1918	do	do	1.26	20
Feb. 8, 1918	do	do	1.25	20
Sept. 7, 1918	do	do	.35	1.7
Dec. 16, 1912	South Fork of San Diego River.	About one-half mile above mouth, NE. ¼ sec. 10, T. 15 S., R. 2 E.		a 1
May 13, 1912	do	do		.0
Mar. 31, 1915	do	300 feet above mouth		16
Apr. 7, 1915	do	do		15
Apr. 14, 1915	do	do		7.4
Apr. 14, 1916	do	Between intake and spillway of South Fork flume.		18
May 28, 1916	do	do	1.26	9.2
Feb. 16, 1917	do	Abandoned U. S. G. S. station, no water in South Fork flume.	.47	5.8
Feb. 8, 1918	do	Mouth	.12	.03
Mar. 7, 1918	do	do		.1
Apr. 14, 1916	South Fork flume	100 feet below temporary intake		15
Dec. 12, 1916	do	Near intake	.64	4.4
Nov. 7, 1917	do	Entire flow of South Fork diverted into flume	3.70	1.6
Nov. 8, 1917	do	do	3.66	1.2
Nov. 9, 1917	do	do	3.65	1.1
Feb. 8, 1918	do	New gage installed	.42	1.9
Mar. 7, 1918	do	One-fourth mile above junction with Cuyamaca Water Co.'s flume.		4.6
Mar. 31, 1915	Chocolate Creek	300 feet above mouth		2.3
Apr. 7, 1915	do	do		1.5
Apr. 14, 1915	do	do		1.2
May 6, 1912	San Vicente Creek	One-half mile above Foster		2.1
Dec. 22, 1917	do	do		.1
Mar. 8, 1918	do	do		.1
Mar. 14, 1918	do	do		77
May 8, 1918	do	do		.1
Feb. 7, 1918	La Mesa ditch	Outlet near La Mesa	1.97	18.1
Do	do	Intake near La Mesa	1.90	17
Feb. 8, 1918	do	Intake near Grossmont	1.87	18
Do	do	Outlet near La Mesa	1.94	16
Apr. 3, 1915	Alvarado Creek	600 feet above mouth. Flow includes waste from Cuyamaca Water Co.'s flume and leakage from La Mesa reservoir.		12

a Estimated.

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SAN DIEGUITO RIVER BASIN.

GENERAL FEATURES.

San Dieguito River, or Santa Ysabel Creek, as it is known from its source to the San Pasqual Valley, rises in the Volcan Mountains on the western slope of the Coast Range and flows westward through San Pasqual Valley, below which it takes its true name, and discharges into the Pacific Ocean midway between Oceanside and San Diego. Its length is 50 miles, and the maximum width of the drainage basin is about 15 miles. The total drainage area is about 340 square miles. It lies south of San Luis Rey River and north of the San Diego River basin.

Numerous small tributaries enter Santa Ysabel Creek between its source and San Pasqual Valley, the largest being Black Canyon and Temescal creeks from the north and Santa Maria Creek from the south. Above San Pasqual Valley the creek maintains a light flow throughout the year, but below that point the channel is dry during the summer months.

The upper part of the basin is rough, the surface being cut by many canyons. The lower part in the foothills is more rolling, with large areas of valley and high mesa land. The basin has very little timber, the principal cover being brush, grass, and a few scattered oaks. The rocks of the region are described in the report on the geology and ground-waters of the western part of San Diego County by A. J. Ellis and C. H. Lee, published by the Survey as Water-Supply Paper 446.

The mean annual rainfall ranges from 10 to 15 inches along the foothills and from 20 to 40 inches in the mountains.

There is no large amount of irrigation in this basin. The East and West San Pasqual ditches irrigate a small area along the river in San Pasqual Valley. A storage reservoir site exists on the main stream at Pamo Valley, below the junction of Temescal Creek with the Santa Ysabel.

GAGING-STATION RECORDS.

SANTA YSABEL CREEK NEAR SANTA YSABEL, CALIF.

LOCATION.—In Santa Ysabel grant, at bridge on Santa Ysabel-Warner Springs road, 1½ miles north of Santa Ysabel, San Diego County.

DRAINAGE AREA.—12.8 square miles (measured on topographic maps).

ELEVATION.—About 2,950 feet above sea level.

RECORDS AVAILABLE.—August 29, 1913, to September 30, 1914. Discharge measurements only for 1914–1915.

GAGE.—Vertical staff fastened to left abutment of bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bedrock and boulders; fairly permanent. October 5, 1913, a concrete control was built across the channel just below gage.

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EXTREMES OF DISCHARGE.—1913-1914: Maximum stage recorded, 2.00 feet January 27, 1914 (discharge, 84 second-feet); no flow October 1-7, 1913, and July 1 to September 30, 1914.

DIVERSIONS.—A small ditch to divert water for irrigation was constructed during the summer of 1914 a short distance above the station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curves well defined except for flood stages. Gage read daily, except Sundays, to half-tenths. Daily discharge ascertained by applying gage height to rating table. Records good.

Discharge measurements of Santa Ysabel Creek near Santa Ysabel, Calif., for 1912-1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Nov. 18	W. J. Isbell	1.20	1.5	Feb. 8	W. J. Isbell	0.93	5.3
Dec. 10	do	1.28	2	Mar. 5	do	1.02	9.3
17	F. C. Ebert	1.26	1.5	14	do	.96	6.1
1913.				17	do	.94	5.8
Jan. 14	W. J. Isbell	.78	2.1	Apr. 3	do	.93	5.8
31	do	.90	2.7	17	do	.88	4.1
Feb. 18	F. C. Ebert	.90	2	24	F. C. Ebert	.95	7.2
Mar. 4	W. J. Isbell	.98	10	May 7	W. J. Isbell	.94	5.7
Apr. 26	do	.99	5.2	11	do	.93	5.0
May 8	do	.89	4.1	18	do	.91	4.4
10	F. C. Ebert	.86	3.2	June 2	do	.85	3.1
June 15	do	.76	1.2	16	do	.83	1.8
23	W. J. Isbell	.68	1.1	Aug. 21	F. C. Ebert	.57	.0
July 23	do	.65	.8	1915.			
Aug. 21	do	.45	.4	Feb. 8	W. J. Isbell	1.04	14
29	do	.53	[a].3	Mar. 6	F. C. Ebert	1.30	31
Oct. 5	F. C. Ebert	.....	.5	Apr. 23	W. J. Isbell	.97	9.3
8	W. J. Isbell	.72	.4	May 12	do	1.50	55
15	do	.69	.3	June 2	do	1.15	24
Nov. 4	do	.73	.7	29	do	.89	5.0
15	do	.75	.7	July 10	F. C. Ebert	.82	3.1
18	do	.78	1.1	10	W. J. Isbell	.84	3.3
Nov. 22	do	.78	1.1	28	do	.76	1.0
1914.				Aug. 2	do	.76	.8
Jan. 6	W. J. Isbell	.81	1.4	6	do	.72	.6
23	F. C. Ebert	.88	4.2	Sept. 10	do	.82	1.8

[a] Estimated.

Daily discharge, in second-feet, of Santa Ysabel Creek near Santa Ysabel, Calif., for 1913-14.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1913.			1913.			1913.		
1	.....	0.4	11	.....	0.2	21	.....	0.2
2	.....	.4	12	.....	.2	22	.....	.2
3	.....	.4	13	.....	.2	23	.....	.3
4	.....	.4	14	.....	.2	24	.....	.4
5	.....	.4	15	.....	.2	25	.....	.4
6	.....	.4	16	.....	.2	26	.....	.5
7	.....	.3	17	.....	.2	27	.....	.5
8	.....	.3	18	.....	.2	28	.....	.5
9	.....	.3	19	.....	.2	29	0.3	.5
10	.....	.2	20	.....	.2	30	.3	.5
						31	.3	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek, near Santa Ysabel, Calif., for 1913-1914—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1913-14.									
1	0.0	0.2	1.5	2.9	11	17	6.3	8.3	2.9
2	.0	.5	1.5	1.5	8.3	16	8.3	6.3	2.9
3	.0	.8	1.5	1.5	6.8	13	6.3	6.3	2.9
4	.0	.2	1.5	1.5	6.3	11	6.3	6.3	2.9
5	.0	.8	1.5	1.5	6.3	11	6.3	6.3	2.9
6	.0	.2	1.5	1.5	6.3	11	6.3	6.3	2.9
7	.0	.2	1.5	1.5	4.3	11	6.3	6.3	4.6
8	.2	.2	1.5	1.5	6.3	9	6.3	6.3	6.3
9	.2	.2	.8	1.5	4.3	8.3	6.3	6.3	4.3
10	.2	.2	.8	1.5	4.3	8.3	6.3	6.3	4.3
11	.2	.2	.8	1.5	4.3	8.3	6.3	6.3	4.3
12	.2	.8	1.5	1.5	4.3	6.3	6.3	6.3	4.3
13	.2	2.9	.8	1.5	4.3	6.3	6.3	6.3	2.9
14	.2	1.5	1.2	1.5	4.3	6.3	6.3	6.3	2.9
15	.2	.8	1.5	4.3	4.3	5.3	6.3	6.3	2.9
16	.2	.8	1.5	4.3	4.3	4.3	4.3	6.3	2.9
17	.2	.8	1.5	4.3	4.3	4.3	6.3	5.3	2.9
18	.0	.8	1.5	5.3	4.3	6.3	4.3	4.3	2.9
19	.0	2.9	1.5	6.3	19	6.3	4.3	4.3	2.9
20	.0	2.9	1.5	4.3	80	6.3	6.3	4.3	2.9
21	.0	1.5	1.5	2.9	80	6.3	6.3	4.3	2.9
22	.2	1.5	1.5	2.9	50	6.3	6.3	4.3	2.9
23	.0	1.5	4.3	2.9	36	6.3	8.3	4.3	2.9
24	.2	1.5	2.9	4.3	25	6.3	6.3	4.3	2.9
25	.0	1.5	1.5	10	22	6.3	6.3	4.3	1.5
26	.0	1.5	2.9	25	19	6.3	6.3	4.3	1.5
27	.0	1.5	2.9	84	19	6.3	6.3	4.3	1.5
28	.2	1.5	2.2	32	19	6.3	6.3	4.3	1.5
29	.2	1.5	1.5	22	.....	8	6.3	4.3	1.5
30	.2	1.5	4.3	19	.....	11	8.3	2.9	1.5
31	.2	.....	2.9	13	.....	8.3	.....	2.9	.....

NOTE.—Previous to Oct. 8, 1913, gage was read only occasionally. No gage-height record for Sundays; discharge interpolated or estimated by comparison with record of flow at Mesa Grande station.

Monthly discharge of Santa Ysabel Creek near Santa Ysabel, Calif., for 1913-14.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913.					1913-14—Con.				
September	0.5	0.2	0.32	19	February	80	4.3	16.7	928
1913-14.					March	17	4.3	8.17	502
October	.2	.0	.10	6	April	8.3	4.3	6.37	379
November	2.9	.2	1.10	66	May	8.3	2.9	5.34	328
December	4.3	.8	1.78	109	June	6.3	1.5	2.98	177
January	84	1.5	8.68	534	The year	84	.0	4.18	3,030

NOTE.—No flow July to September, 1914.

SANTA YSABEL CREEK NEAR MESA GRANDE, CALIF.

LOCATION.—In NW. ¼ sec. 21, T. 12 S., R. 2 E., at Sutherland dam site, about 1 mile below Sutherland, 1½ miles above mouth of Black Canyon Creek, and 4½ miles southwest of Mesa Grande, San Diego County.

DRAINAGE AREA.—53.4 square miles (measured on topographic maps).

ELEVATION.—About 1,900 feet above sea level.

RECORDS AVAILABLE.—December 29, 1912, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank just above Sutherland dam site installed August 27, 1913. Before this date, record from staff gage and Sanders & Rising water-stage recorder at same site and datum. Gage datum was lowered 0.31 foot April 21, 1916, and 0.21 foot October 12, 1916.

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DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Sand; shifting. A concrete control was constructed at an outcrop of bedrock 20 feet below gage. It was damaged by the flood of 1916 and repaired in June and November 6–9, 1916. (See Pl. VI, *A*, p. 17.) Both banks are high, covered with brush, and not subject to overflow.

EXTREMES OF DISCHARGE.—1912–1918: Maximum stage recorded, 11.0 feet January 27, 1916 (discharge, 21,100 second-feet); no flow October 1 to 2, 1913, August 12 to 29, and September 6 to 13, 1914.

DIVERSIONS.—No large diversions above the station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent, as sand collects at artificial control. Rating curves covering short periods are fairly well defined. Daily discharge ascertained by applying to the rating table mean daily gage height obtained by inspecting recorder graph, or, for days of considerable fluctuation, by averaging the hourly discharge; discharge for period for which rating curves were not available determined by shifting-control method or interpolated between discharge measurements. Records goods.

Discharge measurements of Santa Ysabel Creek near Mesa Grande, Calif., for 1912–1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1912.			
Dec. 8	E. W. Case	.....	3.0
17	F. C. Ebert	.....	2.9
1913.			
Jan. 17	E. W. Case	0.70	16
Feb. 7	do	.51	6.7
14	do	.49	5.2
15	do	.48	4.9
16	do	.47	4.6
18	F. C. Ebert	.47	4.1
20	R. W. Day	.50	5.2
26	do	.81	26
Mar. 5	do	.71	19
13	do	.76	23
18	F. C. Ebert	.66	14
26	R. W. Day	.76	23
Apr. 3	do	.72	18
10	do	.63	12
18	do	.69	17
22	do	.60	9.5
30	do	.55	8.0
May 19	do	.49	4.8
29	do	.51	5.7
June 6	do	.45	3.7
11	do	.48	4.0
17	F. C. Ebert	.37	2.4
25	R. W. Day	.31	1.5
July 2	do	.26	1.1
9	do	.14	.2
16	do	.13	.2
23	do	.15	.3
29	do	.22	.6
Aug. 27	F. C. Ebert	.15	.1
Oct. 1	R. W. Day	.....	.0
8	do	.19	.3
15	do	.18	.2
25	do	.13	.1
29	do	.18	.3
Nov. 5	do	.27	.8
12	do	.28	.9
18	do	.35	1.7
26	do	.49	2.2
Dec. 3	do	.41	2.2
10	do	.37	1.8
17	do	.40	2.2
24	do	.53	4.5
31	do	.56	5.1
1914.			
Jan. 3	R. W. Day	.48	3.8
7	do	.45	2.7
14	do	.43	2.9
21	do	.57	5.9
1914.			
Jan. 22	F. C. Ebert	0.55	5.0
28	R. W. Day	1.41	88
Feb. 4	do	.82	22
11	do	.72	15
18	do	.79	15
19	do	1.44	105
20	do	1.21	79
21	do	2.95	481
22	do	2.36	243
26	do	1.45	66
Mar. 5	F. C. Ebert	.93	40
11	R. W. Day	.83	24
18	do	.76	19
25	do	.75	16
Apr. 1	do	.77	19
8	do	.73	15
15	do	.67	12
23	F. C. Ebert	.78	22
29	R. W. Day	.79	19
May 6	do	.71	13
13	do	.65	11
Dec. 14	D. A. McClung	.47	3.3
1915.			
Jan. 18	D. A. McClung	.46	2.7
25	do	.73	13
Feb. 22	R. W. Day	1.40	84
Mar. 8	do	1.38	100
15	do	1.19	60
22	do	1.06	51
Apr. 5	do	1.07	31
12	do	.91	25
Apr. 19	R. W. Day	.90	25
May 11	W. J. Isbell	1.69	129
25	do	1.27	78
June 1	do	1.11	63
9	do	.96	39
29	do	.81	17
July 13	do	.66	10
20	do	.65	9.9
27	do	.61	7.3
Aug. 3	do	.56	6.4
10	do	.49	3.4
17	do	.49	3.4
24	do	.47	3.4
31	do	.46	3.2
Sept. 14	do	.51	4.7
21	do	.45	2.9
28	do	.46	2.9
Oct. 5	do	.46	1.7
12	do	.45	2.9
20	do	.37	1.8
26	do	.38	1.8

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Discharge measurements of Santa Ysabel Creek near Mesa Grande, Calif., for 1912–1918—Continued.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1915.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Nov. 2	W. J. Isbell	0.40	1.9	Jan. 2	D. A. McClung	1.41	12
16	do	.52	3.6	21	F. C. Ebert	1.86	54
30	do	.48	3.5	Feb. 13	McClung and Dubois	1.50	17
Dec. 6	F. C. Ebert	.56	7.0	18	F. C. Ebert	1.73	42
11	do	.52	5.2	23	T. B. Dubois	2.78	345
21	W. J. Isbell	.55	5.2	27	McClung and Dubois	1.97	91
1916.				Mar. 7	D. A. McClung	1.70	41
Jan. 11	W. J. Isbell	1.04	35	9	F. C. Ebert	1.72	45
Feb. 18	Day and Case	.96	120	20	D. A. McClung	1.63	32
Mar. 7	do	1.02	123	27	F. C. Ebert	1.58	23
17	R. W. Day	.73	85	Apr. 13	McClung and Holley	1.52	23
29	do	.82	96	19	McGlashan and Ebert	1.67	35
Apr. 5	W. J. Isbell	.72	72	May 21	F. C. Ebert	1.48	16
12	do	.73	93	June 7	D. A. McClung	1.42	16
25	do	.67	52	29	do	1.30	6.6
May 2	do	.65	50	Aug. 20	McClung and Rogers	1.16	1.5
9	do	.44	32	Oct. 1	D. A. McClung	1.10	.6
16	do	.36	37	Nov. 19	do	1.20	1.4
23	do	.60	32	Dec. 9	do	1.22	1.9
30	do	.48	26	24	do	1.23	2.8
June 6	do	.63	22	31	F. C. Ebert	1.22	2.8
13	do	.63	18	1918.			
20	do	.62	18	Mar. 8	F. C. Ebert	1.68	35
July 11	do	.63	13	14	do	1.87	79
19	F. C. Ebert	.60	6.7	31	D. A. McClung	1.42	19
Aug. 10	W. J. Isbell	.67	5.7	May 6	F. C. Ebert	1.34	12
Sept. 1	do	.56	2.7	Aug. 13	D. A. McClung	1.15	1.6
Oct. 10	S. L. R. Case	1.16	8.8	30	do	1.12	.4
19	W. J. Isbell	1.14	6.2				
Dec. 1	Isbell and McClung	1.37	5.8				
9	F. C. Ebert	1.34	7.8				
21	McClung and Case	1.35	6.2				

Daily discharge, in second-feet, of Santa Ysabel Creek near Mesa Grande, Calif., for 1912–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1				2.8	5	31	17	7.5	5	1.5	0.4	0.4
2				2.8	5	31	17	7.5	5	.8	.3	.4
3				2.8	5	31	17	7.5	5	1.2	.3	.4
4				2.8	5	24	17	7.5	4.5	1.5	.3	.2
5				2.8	6	17	16	7.5	4	2.8	.2	.1
6				2.5	8	20	16	7.5	3.9	1.6	.2	.1
7				2.5	5	23	16	5	3.9	.5	.1	.1
8			3.0	3	10	26	15	5	3.9	.5	.1	.0
9				4	5	26	14	5	3.9	.4	.1	.0
10				6	5	26	14	5	3.9	.4	.1	.0
11				4	5	25	10	5	5	.4	.1	.0
12				6	5	24	10	5	2.8	.4	.0	.0
13				4.5	5	22	10	5	2.8	.4	.0	.0
14				4.5	5	21	10	5	2.8	.4	.0	.0
15				5	5	19	10	5	2.8	.4	.0	.0
16				42	3.9	17	12	5	2.5	.4	.0	.0
17			2.9	17	3.9	15	14	5	2.2	.4	.0	.0
18				10	3.9	14	17	5	3	.4	.0	.0
19				7.5	4	14	10	5	3.9	.4	.0	.0
20				5	5	17	10	5	2.8	.4	.0	.0
21				5	10	22	10	5	1.5	.4	.0	.0
22				5	80	26	10	5	1.5	.4	.0	.0
23				3.9	17	31	10	5	3.9	.4	.0	.0
24				3.9	15	61	10	5	5	.4	.1	.0
25				5	91	26	7.5	5	1.5	.4	.2	.0
26				5	26	22	7.5	5	3	.4	.3	.0
27				5	61	22	7.5	5	5	.5	.4	.0
28				3.9	31	22	7.5	5	4.5	.5	.4	.0
29			2.8	3.9		22	7.5	5	4	.5	.2	.0
30			2.8	3.9		17	7.5	5	3.9	.5	.2	.0
31			2.8	3.9		17		5		.4	.4	.0

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Daily discharge, in second-feet, of Santa Ysabel Creek near Mesa Grande, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.0	0.4	2.4	5.0	29	32	17	20	7.0	1.0	0.1	0.4
2	.0	.7	2.4	5.0	25	31	17	20	7.0	1.0	.1	.4
3	.05	.9	2.4	4.4	24	34	16	18	7.4	1.1	.1	.4
4	.05	.9	2.4	4.1	22	36	16	17	7.0	1.1	.1	.2
5	.05	.9	2.4	3.9	22	37	20	15	7.4	1.0	.1	.1
6	.1	.9	2.4	3.6	20	33	18	14	7.4	.9	.1	.0
7	.2	.9	2.2	3.0	19	31	17	12	11	1.2	.1	.0
8	.3	.9	2.2	2.9	18	27	15	12	14	1.3	.1	.0
9	.4	.9	2.1	2.9	17	25	15	12	6.7	1.2	.1	.0
10	.4	1.0	1.9	2.9	16	23	15	12	6.0	1.0	.1	.0
11	.4	1.0	1.9	2.9	15	24	17	12	5.7	1.0	.2	.0
12	.3	1.0	1.9	2.9	13	24	15	11	5.0	1.1	.0	.0
13	.3	1.3	2.0	2.9	12	22	15	11	4.8	1.2	.0	.0
14	.3	1.3	2.1	2.7	12	22	14	11	4.8	1.4	.0	.3
15	.3	1.3	2.1	3.6	11	21	12	11	4.6	1.4	.0	.3
16	.3	1.4	2.2	9.1	10	20	12	11	4.6	1.2	.0	.3
17	.3	1.5	2.2	9.6	10	19	11	11	4.4	.9	.0	.2
18	.3	1.7	2.2	9.1	9	19	10	10	4.2	.7	.0	.1
19	.3	1.5	2.2	14	205	19	8.5	10	4.2	.6	.0	.1
20	.2	4.4	3.0	8.6	264	18	7	9.4	4.2	.5	.0	.1
21	.2	4.8	3.9	5.5	593	17	10	8.9	4.2	.6	.0	.1
22	.2	4.4	5.0	5.0	175	17	32	8.9	4.0	.2	.0	.2
23	.2	3.2	9.1	5.7	75	16	30	8.4	3.8	.2	.0	.2
24	.3	2.5	4.6	5.0	50	16	18	8.4	3.8	.2	.0	.2
25	.3	2.2	4.6	13	32	16	16	8.4	3.6	.2	.0	.1
26	.3	2.2	6.2	270	28	17	15	8.4	3.6	.1	.0	.2
27	.2	2.2	5.5	800	28	18	16	8.4	3.0	.1	.0	.6
28	.2	2.2	5.3	154	31	18	15	8.1	2.4	.1	.0	.6
29	.3	2.2	5.0	122	.....	19	21	7.7	1.5	.1	.0	.4
30	.3	2.2	5.3	40	.....	35	24	7.7	1.0	.1	.2	.2
31	.4	.....	5.3	33	.....	25	.....	7.0	.....	.1	.2	.....
1914–15.												
1	.2	.9	2.7	4.1	60	181	37	255	60	13	6.5	3
2	.5	.9	4.1	4.1	278	215	35	379	56	13	6.5	3
3	.8	1.0	3.4	4.4	227	136	34	263	55	14	6.5	3
4	1.1	.8	3.4	4.4	107	130	32	240	54	14	5	3.5
5	1.4	.7	3.6	4.8	66	120	31	540	51	14	4.5	3.5
6	1.4	.5	3.4	4.8	53	110	34	313	47	14	4.5	3.5
7	1.4	.5	3.2	4.6	45	105	36	251	44	13	3.5	3.5
8	1.4	.5	2.7	4.8	42	100	37	214	41	12	3	3.5
9	1.4	1.3	2.7	5.5	52	94	35	180	41	12	3.5	3.5
10	1.1	2.7	2.5	5.3	455	115	26	153	39	11	3.5	3.5
11	.9	2.5	3.0	3.4	571	96	27	125	38	11	3.5	2.5
12	.8	2.3	6.2	3.4	332	88	25	116	37	10	3	.5
13	.5	2.1	4.8	3.4	181	78	25	108	36	10	3	1.5
14	.5	1.9	3.2	3.6	121	69	25	101	35	10	2.5	4
15	.5	1.7	3.0	3.4	91	62	30	99	34	10	2.5	4.5
16	.5	1.5	3.2	3.4	112	62	34	81	31	10	3	4.5
17	.5	1.3	5.3	3.6	134	60	29	98	30	10	3.5	4
18	.6	1.1	6.7	3.2	130	58	27	136	29	10	3.5	1
19	.7	.8	7.6	3.2	127	57	25	106	28	10	3	3
20	.5	.7	7.6	3.2	192	53	22	96	28	9.5	3	3
21	.8	.7	5.5	3.4	130	52	60	91	27	8	3	3
22	1.3	.7	5.7	14	93	51	107	87	26	8	2	3
23	1.2	1.1	6.0	7.6	84	48	63	77	25	8	1.5	3
24	.8	1.3	5.5	5.7	112	47	69	78	23	7.5	2.5	3
25	.5	1.3	5.3	10	192	44	52	75	22	7.5	3	3
26	.4	1.4	5.3	10	136	43	44	73	21	7.5	5.5	3
27	.4	1.4	4.6	8.1	125	40	44	70	21	7.5	7	3
28	.4	1.4	2.9	26	123	40	44	66	19	6.5	4.5	3
29	.4	1.6	3.9	471	.....	42	60	66	17	6.5	4	3
30	.5	1.6	3.9	408	.....	40	182	65	16	6.5	3.5	3
31	.8	.....	4.1	78	.....	38	.....	62	.....	7	3	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Mesa Grande, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	2.6	*1.9	3.2	4.0	493	240	86	50	25	15	6	3.3
2	2.4	2.0	3.2	10	461	195	82	50	24	15	6	3.3
3	2.2	2.0	3.2	12	400	125	79	45	24	15	6	3.9
4	2.0	2.0	12	9	341	115	75	42	23	14	6	4.2
5	1.7	2.2	13	10	313	330	72	41	22	14	5.5	3.9
6	1.8	3.0	7	10	287	150	75	40	22	14	5.5	3.9
7	2.0	6	6.5	9.5	262	123	78	38	22	14	5.5	3.9
8	2.1	4.9	6	8	239	95	81	35	21	13	5.5	4.2
9	2.3	4.3	6	18	206	90	84	32	20	13	5.5	4.6
10	2.5	6.5	5.5	62	196	85	87	33	20	13	5.5	4.6
11	2.7	6.5	5	45	186	150	90	33	19	13	1.8	3.5
12	2.9	5.5	5	19	166	140	93	34	19	12	1.8	3.1
13	2.8	4.9	5	15	157	125	72	34	18	11	1.6	2.7
14	2.7	4.3	12	36	148	120*	70	35	18	10	1.4	2.7
15	2.5	4.0	18	54	130	110	75	36	18	9	2.0	8
16	2.4	4.0	10	405	130	100	74	37	18	8	4.9	6.5
17	2.3	3.4	8	4,130	130	85	67	36	18	7.5	3.3	4.6
18	2.1	3.2	6.5	4,200	122	83	64	35	18	7	3.5	9
19	2.0	3.2	6	2,580	122	84	62	35	18	6.5	5.3	12
20	1.8	3.2	5	1,280	114	110	59	34	18	6.5	5.3	10
21	1.8	3.4	5	500	139	113	57	33	18	6.5	4.9	10
22	1.8	3.6	5	480	139	110	61	33	18	6.5	2.9	11
23	1.8	3.8	5	225	122	204	58	32	18	6.5	2.7	11
24	1.8	3.6	6	200	107	127	56	31	17	6.5	3.5	12
25	1.8	3.4	6.5	416	107	122	52	30	17	6	4.9	9.5
26	1.8	3.4	6	406	122	119	51	30	17	6	5.5	6.5
27	1.8	3.2	6	10,800	157	107	51	29	17	6	5.5	6.5
28	1.8	3.2	6	4,720	122	109	51	28	16	6	5.5	7.5
29	1.8	3.2	7.5	1,520	200	96	51	27	16	6	4.2	18
30	1.9	3.2	10	800	.....	93	51	26	16	6	4.2	18
31	1.9	.....	12	560	.....	89	.....	26	.....	6	3.5	.....
1916–17.												
1	20	5.5	6.5	13	25	72	20	19	21	4.3	4.8	.5
2	30	5.5	9	12	25	65	19	18	20	5.5	4.8	.5
3	11	5.5	11	88	17	54	18	16	21	7	4.8	3.4
4	9	5.5	11	39	18	54	15	15	21	8	4.8	1.4
5	8.5	9.5	8	21	18	54	14	16	21	7	4.8	2.5
6	11	9	8.5	16	17	51	15	16	21	7	3.8	2.5
7	6.5	8	7.5	13	16	45	16	17	21	7	3.4	2.3
8	7	7	6	11	17	41	15	22	21	7	3.0	2.3
9	7.5	6	7	11	17	46	31	22	20	6.5	2.5	2.1
10	9	5.5	6.5	9	17	70	31	21	15	6.5	2.5	1.9
11	8	6.5	5.5	10	17	61	21	19	14	6	3.4	1.9
12	13	6.5	5.5	12	18	52	19	16	14	5	3.4	1.9
13	5.5	5.5	6.5	32	17	48	19	16	13	2.5	3.4	2.1
14	5.5	6	6	19	16	50	19	15	13	4.8	3.0	2.3
15	4.8	5	5.5	35	16	48	21	14	12	6	2.3	1.7
16	4.6	5.5	7	35	15	42	86	14	12	5.5	2.5	1.6
17	5	5.5	6.5	23	50	40	68	14	13	6	2.3	1.6
18	5.5	5.5	6.5	39	55	38	42	28	13	5	2.3	1.6
19	5.5	5	6.5	72	77	35	35	22	12	4.8	2.3	1.7
20	5	7	7.5	72	86	35	28	19	8.5	2.1	2.3	12
21	5	5.5	7.5	54	64	30	27	17	9	3.8	2.5	3.0
22	4.8	6	7	44	204	27	26	17	6	3.4	1.9	1.9
23	5.5	7	8	36	294	25	24	19	6	3.4	2.3	2.1
24	6.5	7	31	32	162	25	22	36	7.5	6.5	2.1	2.5
25	4.8	7.5	48	29	165	25	20	43	7.5	5	2.3	2.3
26	4.6	8	27	29	118	24	20	34	7.5	4.8	2.1	1.9
27	5.5	7.5	23	28	96	23	27	29	6	6.5	1.9	1.4
28	5.5	7.5	14	31	83	21	28	28	6	6	.6	1.4
29	6.5	6	14	30	.....	21	27	29	4.8	5.5	.6	1.4
30	7	6	14	28	.....	21	22	30	3.4	5.5	.5	1.7
31	6.5	.....	14	27	.....	22	.....	27	.....	6	.5	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Mesa Grande, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	1.0	0.9	2.9	2.2	3.2	5	21	12	10	5.5	0.5	1.5
2	1.0	.9	2.9	2.2	3.2	4.6	22	12	9.5	4.1	.5	.7
3	.6	.7	2.9	1.5	3.2	4.6	22	12	9.5	3.5	.3	.2
4	.5	1.1	2.2	1.5	3.2	4.3	21	12	9.5	3.5	.5	.2
5	.5	1.8	2.2	1.5	3.2	4.3	21	12	9	3.5	.7	.2
6	.9	4.6	2.6	1.8	2.9	7	20	12	8.5	3.0	1.0	.2
7	.7	5	2.6	1.8	3.6	36	19	12	9	3.5	3.5	.1
8	.7	4.0	1.5	2.2	2.9	52	17	12	8.5	3.5	4.1	.2
9	.7	3.2	1.4	2.9	2.6	14	18	14	9	4.1	2.0	.2
10	.9	2.9	1.4	2.9	2.9	19	17	13	8.5	.3	2.5	.2
11	1.2	2.6	1.8	2.9	2.9	204	17	12	6.5	.3	1.0	.5
12	1.2	2.2	1.8	2.9	3.2	671	18	12	3.5	.3	1.5	3.0
13	1.3	2.2	2.6	9	3.2	208	20	12	4.7	.3	2.0	5.5
14	1.8	2.6	1.8	4.0	3.6	78	19	12	3.5	.3	3.0	6
15	1.5	2.9	1.5	3.6	3.6	56	17	12	6.5	.3	4.1	3.5
16	2.2	2.9	1.5	2.9	3.6	38	16	12	7.5	.2	4.1	3.0
17	2.9	2.2	1.5	2.9	4.6	34	15	12	6	2.0	3.5	2.5
18	2.2	1.4	1.8	2.2	18	30	14	12	6	3.0	2.5	2.0
19	1.2	1.4	1.8	3.2	11	68	13	12	7.5	2.0	1.5	2.5
20	1.2	2.2	1.8	2.9	7.5	93	12	12	7	1.5	.3	1.0
21	1.0	1.8	2.2	2.9	5.5	59	11	11	6.5	1.0	.3	1.0
22	1.1	2.6	2.9	2.6	27	51	12	10	7	1.0	.2	2.5
23	1.1	3.2	2.2	2.2	13	45	13	10	7	.2	.2	3.0
24	1.0	4.0	2.6	2.2	8.5	43	14	9.5	7.5	.2	.2	1.5
25	1.1	4.0	2.2	6	9.5	34	14	9.5	7	.2	.2	.7
26	1.1	3.2	2.2	13	8	32	15	10	6	.2	.2	.5
27	1.3	3.2	1.8	7	7	29	16	10	5.5	.2	3.5	.5
28	1.6	2.9	2.2	5.5	5.5	24	16	14	6.5	.2	1.0	.3
29	1.4	2.9	1.8	5	.....	22	15	22	6	.3	.5	.3
30	1.2	2.9	2.2	4.3	.....	21	14	13	5.5	.2	1.5	.4
31	1.0	.....	1.8	4.0	.....	20	.....	12	.....	.2	2.5	.....

NOTE.—Daily discharge determined as follows: 1912–1915, Dec. 29, 1912, to Jan. 25, 1914, from well-defined rating curve; Jan. 26 to Apr. 29, 1914, from rating curves covering short periods and by shifting-control method; Apr. 30, 1914, to Mar. 2, 1915, from well-defined rating curves; Mar. 3 to Sept. 30, 1915, from rating curves covering short periods and by shifting-control method.

1916: Shifting-control method used Oct. 1–25, 1915, Dec. 4–14, Mar. 30 to Apr. 12, and May 10 to Aug. 10. Jan. 16–31, computed from hydrograph; Oct. 1–11, estimated from discharge measurements; Nov. 6–9, interpolated. Staff gage read Jan. 28 to Feb. 28, and Aug. 11 to Sept. 21, no record Mar. 1–16; discharge estimated from record of flow on San Luis Rey River near Mesa Grande. Control repaired Nov. 6–9; discharge interpolated.

Staff gage read Oct. 7–12, 1917, and June 8–14, 1918. Hourly discharge averaged for March 7, 10–13, and 19, 1918.

Monthly discharge of Santa Ysabel Creek near Mesa Grande, Calif., for 1913–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1913.				
January	42	2.5	6.90	369
February	91	3.9	15.6	866
March	61	14	23.60	1,450
April	17	7.5	11	708
May	7.5	5	7.42	456
June	5	1.5	3.58	213
July	2.8	.4	.65	40
August	.4	.0	.14	9
September	.4	.0	.06	4
The period	.....	.....	.....	4,120

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Monthly discharge of Santa Ysabel Creek near Mesa Grande, Calif., for 1913–1918—Con.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1913–14.				
October	0.4	0.0	0.24	15
November	4.8	.4	1.76	105
December	9.1	1.9	3.37	207
January	800	2.7	50.2	3,090
February	593	9	63.9	3,550
March	37	16	23.6	1,450
April	32	7	16.2	964
May	20	7	11.3	695
June	14	1	5.28	314
July	1.4	.1	.74	46
August	.2	.0	.05	3
September	.6	.0	.19	11
The year	800	.0	14.4	10,400
1914–15.				
October	1.4	.2	.78	48
November	2.7	.5	1.27	76
December	7.6	2.5	4.39	270
January	471	3.2	36.2	2,230
February	571	42	156	8,660
March	215	38	79.8	4,910
April	182	22	44.4	2,640
May	549	62	150	9,220
June	60	16	34.4	2,050
July	14	6.5	10.0	615
August	7	1.5	3.77	232
September	4.5	.5	3.07	183
The year	571	.2	43.0	31,100
1915–16.				
October	2.9	1.7	2.12	130
November	6.5	1.9	3.70	220
December	18	3.2	7.13	438
January	10,800	4.0	1,080	66,400
February	493	107	201	11,600
March	330	83	127	7,810
April	93	51	68.8	4,090
May	50	26	34.8	2,140
June	25	16	19.2	1,140
July	15	6	9.63	592
August	6	1.4	4.36	268
September	18	2.7	7.06	420
The year	10,809	1.4	131	95,200
1916–17.				
October	30	4.6	7.87	484
November	9.5	5	6.43	383
December	48	5.5	11.4	701
January	88	9	30.6	1,880
February	294	15	62.1	3,450
March	72	21	40.8	2,510
April	86	14	26.5	1,580
May	43	14	21.5	1,320
June	21	3.4	13.0	774
July	8	2.1	5.48	337
August	4.8	.5	2.71	167
September	12	.5	2.25	134
The year	294	.5	19.0	13,700
1917–18.				
October	2.9	.5	1.20	73.8
November	5	.7	2.61	155
December	2.9	1.4	2.08	128
January	13	1.5	3.60	221
February	27	2.6	6.29	349
March	671	4.3	64.9	3,990
April	22	11	16.6	988
May	22	9.5	12.1	744
June	10	3.5	7.14	425
July	5.5	.2	1.57	96.5
August	4.1	.2	1.59	97.8
September	6	.1	1.46	86.9
The year	671	.1	10.2	7,360

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SANTA YSABEL CREEK NEAR RAMONA, CALIF.

LOCATION.—In NE. ¼ NE. ¼ sec. 27, T. 12 S., R. 1 E., at Pamo dam site, below Pamo Valley, 1½ miles below mouth of Temescal Creek, 4½ miles north of Ramona, San Diego County, and about 4½ miles above site of station maintained at mouth of canyon near Escondido from 1906 to 1912. Previous to February 1, 1916, station was maintained at Pamo Camp, half a mile above dam site.

DRAINAGE AREA.—110 square miles (measured on topographic maps).

ELEVATION.—About 900 feet above sea level.

RECORDS AVAILABLE.—February 5, 1912, to September 30, 1918.

GAGE.—Leitz water-stage recorder, with concrete well and house, on left bank at dam site. Two vertical staffs have been used: "C" is fastened to outside of concrete well and is at same datum as water-stage recorder; "B" is fastened to solid rock on left bank a short distance above "C" and is at different datum. Staff at original station above dam site was in four sections on left bank, a short vertical section at control being read at extremely low water.

DISCHARGE MEASUREMENTS.—Made from cable about 1,000 feet above gage at dam site or by wading. The cable at Pamo Camp was at gage.

CHANNEL AND CONTROL.—Sand; somewhat shifting. Banks high and clean. Channel straight for 200 feet above and 600 feet below gage. Concrete control, built across channel just below gage, was completed December 8, 1916, and was destroyed by high water March 12, 1918. It was only partly effective during high water, as a large boulder in the channel a few feet upstream caused a sand bar to form at control. This boulder was removed in September, 1917. November 19, 1912, a concrete control was built about 30 feet below gage at Pamo Camp. (See Pl. V, *C*, p. 16.) It was destroyed by the flood January, 1916.

EXTREMES OF DISCHARGE.—1912–1918: Maximum stage recorded, 14.0 feet January 27, 1916 (discharge, 28,400 second-feet); minimum stage recorded, 0.74 foot October 1–6, 1915 (discharge, 0.1 second-foot).

DIVERSIONS.—No large diversions above the station. Water is diverted from Santa Ysabel Creek near the mouth of the canyon, 4½ miles below the station, by East San Pasqual ditch, which takes out on left bank, and West San Pasqual ditch, which takes out on right bank and below intake of the East San Pasqual.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. The concrete control at Pamo Camp, except for short periods after high water, was very effective. The rating curves for gage at Pamo Camp are well defined; those for new gage are fairly well defined. Staff gage read to hundredths three times daily. Water-stage recorder in operation January 22 to June 30, 1917; mean daily gage height obtained by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating tables, or, for periods not covered by rating curves, by shifting-control method and by interpolation between discharge measurements when there was little change in stage. Records for 1916, 1917, and 1918 fair; earlier records good.

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Discharge measurements of Santa Ysabel Creek near Ramona, Calif., for 1912–1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1912.			
Feb. 5	H. L. Davis	0.30	3.3
5	do	.30	3.8
8	F. C. Ebert	.32	3.8
17	H. L. Davis	.28	3.0
Mar. 6	F. C. Ebert	.94	49
8	do	.62	21
8	H. L. Davis	.60	18
27	F. C. Ebert	.94	50
Apr. 1	do	1.01	50
5	H. L. Davis	.85	41
12	F. C. Ebert	2.22	206
14	H. L. Davis	1.70	154
14	do	1.72	154
15	do	1.68	141
23	do	.84	53
May 8	F. C. Ebert	.92	54
27	H. L. Davis	.50	21
July 15	F. C. Ebert	.10	1.4
Aug. 12	H. L. Davis	-.10	[a] .05
Oct. 29	F. C. Ebert	.06	2.2
Nov. 19	E. W. Case	.99	2.4
20	do	1.01	2.5
Dec. 8	do	1.00	3.5
1913.			
Jan. 10	J. E. Gerish	1.24	9.2
10	W. S. Post	1.25	8.5
16	E. W. Case	1.54	40
17	do	1.43	22
19	J. E. Gerish	1.31	13
Feb. 15	W. S. Post	1.23	6.9
17	F. C. Ebert	1.22	6.7
18	do	1.23	6.9
22	R. W. Day	2.35	168
22	do	2.00	97
25	do	1.74	56
25	do	2.27	172
Mar. 4	do	1.47	27
11	do	1.39	21
17	do	1.39	19
18	F. C. Ebert	1.39	18
20	do	1.46	25
24	do	1.93	106
31	do	1.44	24
Apr. 9	do	1.36	17
16	do	1.28	15
22	do	1.33	13
29	do	1.27	9.5
May. 6	do	1.25	6.6
11	do	1.24	6.8
17	R. W. Day	1.19	5.3
23	do	1.17	4.6
27	do	1.18	4.8
June 3	do	1.16	4.7
13	do	1.12	2.6
16	F. C. Ebert	1.11	1.7
26	R. W. Day	1.11	1.4
July 2	do	1.00	.7
8	do	.71	[b] .1
14	do	.70	[b] .1
22	do	.68	0
30	do	.75	.2
Aug. 28	F. C. Ebert	.72	[b] .05
Oct. 4	do	.67	[b] .1
Nov. 12	do	.79	.2
13	do	1.47	25
14	do	1.15	5.7
16	do	1.00	1.7
20	do	1.21	7.2
21	do	1.18	6.3
30	do	1.00	2.8
Dec. 4	do	.99	2.5
16	do	.99	2.4
16	do	.99	2.4
1914.			
Jan. 8	R. W. Day	1.10	3.5
16	do	1.25	9.5
20	do	1.32	12
22	F. C. Ebert	1.18	8
1914.			
Jan. 26	R. W. Day	4.90	1310
29	do	1.90	90
Feb. 6	do	1.50	26
10	do	1.43	20
22	do	3.05	386
Mar. 4	F. C. Ebert	1.72	60
11	R. W. Day	1.57	36
20	do	1.47	27
28	do	1.73	61
Apr. 9	do	1.46	28
23	F. C. Ebert	1.52	33
May 1	R. W. Day	1.52	32
9	do	1.39	18
12	F. C. Ebert	1.38	17
Oct. 12	do	.84	.2
Dec. 12	D. A. McClung	1.24	10
1915.			
Jan. 14	Lee and Sleppy	1.16	5.8
16	D. A. McClung	1.15	4.6
17	do	1.15	4.1
23	do	1.34	15
24	do	1.26	11
Feb. 6	do	1.90	90
7	do	1.82	82
13	do	3.02	277
20	R. W. Day	2.23	152
27	do	2.17	131
Mar. 6	do	2.27	157
7	Ebert and Day	2.24	157
12	R. W. Day	2.11	119
20	do	1.87	71
27	do	1.74	64
Apr. 2	do	1.72	55
9	do	1.66	45
17	do	1.61	41
May 7	do	3.02	326
7	do	3.06	373
7	do	2.94	315
7	do	2.93	311
8	do	2.90	297
June 1	W. J. Isbell	1.84	72
July 13	do	1.37	14
Aug. 10	do	1.15	3.9
24	do	1.13	3.0
Sept. 16	F. C. Ebert	1.14	4.3
28	W. J. Isbell	1.14	4.1
Oct. 8	F. C. Ebert	1.07	2.2
12	W. J. Isbell	1.17	3.3
26	do	1.08	2.5
Nov. 9	do	1.26	7.8
30	do	1.21	5.5
Dec. 6	F. C. Ebert	1.31	11
21	H. D. McGlashan	1.27	8.9
1916.			
Jan. 11	W. J. Isbell	1.83	69
26	W. D. McFadden	2.50	531
Feb. 1	do	4.80	742
2	do	4.70	704
4	R. W. Day	4.40	508
5	do	4.30	496
8	do	3.95	373
10	do	3.80	345
12	do	3.65	308
16	do	3.45	268
19	do	3.18	221
23	do	2.90	186
24	do	2.88	187
26	do	2.90	215
Mar. 1	do	3.05	310
6	do	2.75	203
8	do	2.55	178
14	F. C. Ebert	2.50	148
16	R. W. Day	2.35	141
20	R. W. Day	2.30	158
21	do	2.50	183
26	do	2.30	150
27	do	2.30	165
30	do	2.20	151

[a] Made by floats.

[b] Estimated.

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Discharge measurements of Santa Ysabel Creek near Ramona, Calif., for 1912–1918—Con.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Apr. 5	W. J. Isbell	2.14	126	Feb. 13	D. A. McClung	1.78	27
12	do	2.02	139	18	F. C. Ebert	1.76	80
19	do	1.90	90	27	D. A. McClung	2.45	145
25	do	1.66	82	Mar. 8	McClung and Dean	2.34	61
May 2	do	1.66	69	9	F. C. Ebert	2.33	66
9	do	1.52	56	21	D. A. McClung	2.17	52
16	do	1.37	57	28	F. C. Ebert	2.02	42
23	do	1.33	55	Apr. 13	McClung and Holley	1.78	30
30	do	1.24	43	18	McGlashan and Ebert	2.06	70
June 6	do	1.15	36	May 21	F. C. Ebert	1.82	33
13	do	1.08	27	June 8	D. A. McClung	1.77	23
20	do	1.00	27	29	do	1.55	65
July 11	do	.87	15	Aug. 20	McClung and Gavin	1.40	2.4
18	F. C. Ebert	.79	14	Sept. 4	McClung and Campbell	1.29	.8
Aug. 10	W. J. Isbell	.71	11	Oct. 4	T. P. Ellis	1.25	1.3
Oct. 7	S. L. R. Case	.58	24	Nov. 19	McClung and DeVenelle	1.34	2.5
17	do	.65	12	Dec. 23	D. A. McClung	1.47	4.5
18	W. J. Isbell	.64	15	31	F. C. Ebert	1.48	6.4
Dec. 1	Isbell and McClung	.42	12				
8	F. C. Ebert	1.64	12	1918.			
18	D. A. McClung	1.69	11	Mar. 8	F. C. Ebert	2.16	104
22	McClung and Case	1.73	13	14	do	2.38	131
25	D. A. McClung	1.60	66	Apr. 1	D. A. McClung	2.65	82
27	McClung and Case	1.47	28	May 5	F. C. Ebert	2.41	15
				Aug. 12	D. A. McClung	2.08	1.2
1917.				29	do	2.10	.5
Jan. 19	F. C. Ebert	2.56	164				
21	do	2.18	102				

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Daily discharge, in second-feet, of Santa Ysabel Creek near Ramona, Calif., for 1912–1918.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912.								
1	.....	9.5	59	34	14	4.2	1.3	0.5
2	.....	17	52	34	14	4.8	1.0	.4
3	.....	9.5	43	34	14	6.6	1.0	.4
4	.....	14	40	31	12	9	.8	.6
5	4	17	40	31	12	5.8	.3	.6
6	4	55	36	30	12	4.5	.3	.6
7	4	29	30	45	12	4.2	.1	.4
8	4	21	37	92	11	3.8	.1	.5
9	4.8	31	42	106	10	3.0	.05	.6
10	4.8	278	45	80	11	2.8	.05	.5
11	4.8	54	218	68	11	2.0	.1	.04
12	4.8	52	252	58	11	2.0	.05	.04
13	4	182	185	50	11	2.2	.05	.04
14	4	69	166	40	12	2.0	.05	.04
15	4	44	133	34	11	2.0	.05	.04
16	3.4	38	114	30	11	1.3	.05	.04
17	3.1	25	89	25	9	1.8	.05	.03
18	3.1	18	85	24	7.4	7.4	.4	.02
19	3.1	14	75	22	7.0	4.8	.5	.02
20	3.1	11	66	20	6.6	2.4	.5	.02
21	3.7	19	59	20	6.2	1.8	.3	.03
22	3.4	21	53	20	6.2	1.3	.2	.02
23	3.1	16	47	20	6.6	1.0	.1	.02
24	3.1	16	43	20	6.6	1.0	.05	.02
25	3.1	13	41	19	6.2	1.0	.04	.03
26	3.1	44	40	20	5.0	.8	.04	.03
27	3.1	55	46	20	4.5	.8	.05	.02
28	3.1	36	40	19	4.0	1.0	.1	.02
29	1.9	45	38	18	5.4	1.3	1.6	.02
30	.....	122	36	18	7.0	1.6	1.3	.03
31	.....	73	.....	16	.....	1.6	1.0	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	0.05	1	4.5	4	6	40	24	10	5.5	0.5	0.2	0.1
2	.05	1	4.5	4	5.5	33	30	9.5	5.5	.5	.2	.1
3	25	2	4.5	3.5	5.5	30	27	10	5.5	.5	.2	.3
4	14	2.5	4	3.5	5.5	28	24	9	4.5	.5	.2	.3
5	25	2.5	3.5	4	7.5	28	21	9	4	.5	.1	.3
6	14	2.5	3.5	3.5	11	26	19	8	4	.3	.1	.3
7	6.5	2.5	3.5	3	9	25	18	8	3.5	.2	.1	.3
8	4	2	3.5	4	21	21	17	8.5	3.5	.1	.1	.3
9	4	2	4	5.5	11	19	16	9	3.5	.1	.1	.3
10	4	2	4	8	8.5	19	15	8	3.5	.1	.1	.3
11	2	2	4	5	7.5	19	15	8	3	.1	.1	.3
12	2	3	4	5	7.5	39	15	8	3	.1	.1	.3
13	2	3	3.5	5.5	7	39	14	7	2.5	.1	.1	.2
14	1.5	2.5	3.5	5.5	7	30	18	7	2.5	.1	.1	.2
15	1.5	2.5	4	6	7.5	25	12	7	2	.1	.1	.2
16	1.5	2.5	4	39	8	21	10	6	1.5	.1	.1	.2
17	1.5	2.5	4	22	7	19	10	6	1.5	.05	.1	.2
18	1	2.5	4	16	7	19	16	6	1.5	.05	.1	.2
19	1.5	2.5	3.5	12	7	20	18	6	1.5	.05	.05	.2
20	1.5	2.5	3.5	9	8.5	30	14	6	1.5	.05	.05	.2
21	1.5	2.5	3.5	7.5	16	25	14	6	1.5	.05	.05	.1
22	1.5	2.5	3.5	7	118	22	13	6	1.5	.0	.05	.1
23	1.5	2.5	3.5	7	28	20	13	5.5	1.5	.0	.05	.1
24	2	2.5	3.5	6.5	24	72	11	5.5	1.5	.05	.05	.1
25	2	2.5	4	6	81	49	10	5.5	1.5	.05	.05	.1
26	2	2.5	3.5	6	58	39	9.5	5	1.5	.1	.05	.1
27	2	2.5	3.5	5.5	123	33	9.5	5.5	1.5	.1	.05	.1
28	2	2.5	3.5	6	67	32	9.5	7.5	2	.4	.05	.1
29	2	2.5	3.5	6.5	.....	27	9.5	9	1	.5	.05	.1
30	2	3.5	3.5	6	.....	26	9.5	6	1	.2	.1	.1
31	2	.....	4	6	.....	25	.....	5.5	.....	.2	.1	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Ramona, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.1	.01	3	6	44	77	35	32	12	1.5	0.1	0.1
2	.1	.1	2.5	5	38	67	33	29	12	1.0	.1	.1
3	.1	.1	2.5	5	33	60	32	27	11	.8	.1	.1
4	.1	.1	2.5	5	29	57	29	26	11	.7	.1	.1
5	.1	.2	2.5	5	28	57	33	24	10	.9	.1	.1
6	.1	.2	2.5	4	27	54	35	24	10	.4	.1	.1
7	.1	.2	2	4	26	44	30	21	13	.3	.1	.1
8	.1	.2	2	4	24	41	29	20	22	.8	.1	.1
9	.1	.2	1.5	4.5	24	41	28	18	14	.7	.1	.1
10	.1	.2	1.5	4	19	41	30	20	12	.2	.1	.1
11	.1	.2	1.5	4	22	37	26	19	11	.2	.1	.1
12	.1	.2	2	4	21	34	24	18	9.5	.2	.1	.1
13	.1	28	2	4	21	34	23	17	8.0	.2	.1	.1
14	.1	6	2	4	23	31	22	19	9.0	.2	.1	.1
15	.1	3	2.5	5	24	33	22	19	6.5	.2	.1	.1
16	.1	2.5	2.5	11	24	31	20	18	8.0	.2	.1	.1
17	.1	2.5	2.5	10	24	28	20	18	8.5	.1	.1	.1
18	.1	3	2.5	9	19	26	17	16	8.0	.1	.1	.1
19	.1	13	3	26	685	26	16	14	8.5	.1	.1	.1
20	.1	9	4	15	255	25	14	14	7.5	.1	.1	.1
21	.1	6.5	4	11	1,490	26	15	13	7.5	.1	.1	.1
22	.1	6	18	7	440	26	64	13	6.5	.1	.1	.1
23	.1	3	18	8	285	25	46	13	6.5	.1	.1	.1
24	.1	2	11	13	210	26	27	14	6.0	.1	.1	.1
25	.1	2.5	9	26	155	28	25	13	6.0	.1	.1	.1
26	.1	2.5	7	785	122	31	25	13	5.0	.1	.1	.1
27	.1	2	6	1,140	88	38	24	14	4.5	.1	.1	.1
28	.1	2	5	208	81	40	21	13	4.5	.1	.1	.1
29	.1	2	4.5	101	.....	38	23	12	3.0	.1	.1	.1
30	.1	2.5	5	66	.....	94	27	12	2.0	.1	.1	.1
31	.1	.....	6.5	51	.....	38	.....	11	.....	.1	.1	.....
1914–15.												
1	.1	1.9	4.6	5.8	151	278	56	393	74	26	9	3.5
2	.1	1.9	4.6	5.8	460	412	54	628	67	24	8.5	3.5
3	.1	1.4	4.3	5.8	365	223	55	470	70	25	8	4
4	.1	.2	3.8	7.0	170	203	52	375	69	26	8	5
5	.1	.4	4.0	7.5	115	184	55	850	67	24	8	5
6	.1	.4	4.3	7.0	88	161	60	438	66	24	7	4
7	.1	.4	4.6	6.4	76	152	55	350	60	23	6	4
8	.2	.3	4.0	5.8	67	144	52	283	62	22	5.5	3.5
9	.2	2.8	3.8	7.0	62	134	49	255	55	22	5	3.5
10	.2	18	4.3	7.5	1,080	172	44	220	54	22	4.5	3
11	.6	4.6	5.2	6.1	1,250	136	38	190	54	19	4.5	2.5
12	.5	3.4	10	5.8	510	125	38	170	52	17	4.5	1.5
13	.5	2.6	7.0	6.1	270	113	38	160	49	15	4.5	1.5
14	.4	2.4	5.5	6.1	230	106	42	140	46	14	4	4.5
15	.4	2.4	5.5	6.4	185	97	52	135	44	14	4	4
16	.4	1.8	5.5	5.8	180	88	45	125	41	14	3.5	4
17	.4	1.4	8.5	5.8	190	86	41	120	41	14	5	4
18	.5	1.3	12	5.5	135	84	38	225	42	13	6	3.5
19	.5	.7	9.0	4.9	120	84	39	145	38	12	5.5	3.5
20	.6	.6	10	4.6	203	76	38	130	38	11	5	4
21	.9	.6	9.5	5.5	198	70	138	120	37	9.5	4.5	4
22	1.4	.9	8.0	25	152	69	263	110	36	9	4	3.5
23	1.6	1.3	8.5	13	136	67	123	110	34	9	2.5	3.5
24	1.3	1.3	6.7	10	150	66	142	103	32	10	3.5	3.5
25	.9	1.2	6.4	19	278	62	88	100	32	9.5	4	5
26	.8	1.3	7.0	17	168	61	74	90	32	9.5	110	5.5
27	.7	1.4	7.0	13	142	58	67	89	32	9	20	5.5
28	.7	1.8	7.0	21	132	61	74	82	30	9	9	5
29	.7	2.0	6.7	915	.....	77	125	80	28	9	7	5
30	1.1	2.2	5.8	760	.....	64	412	79	27	9.5	3.5	4.5
31	1.6	.....	6.7	255	.....	60	.....	73	.....	9.5	3	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Ramona, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	3.9	2.4	6.5	7	754	300	140	67	38	20	12	8
2	3.3	3.3	7	17	694	290	135	65	38	20	12	8
3	3.6	3.9	7	20	666	240	130	65	37	19	12	8
4	3.3	4.2	38	15	666	230	125	65	37	18	12	8
5	2.6	4.2	34	17	612	255	120	65	36	18	12	8
6	2.0	7	11	17	517	215	125	65	36	17	11	9
7	1.6	8.5	9	15	459	200	115	60	35	17	11	9
8	2.0	7.5	7.5	12	382	190	105	60	30	16	11	1
9	1.8	8	7	28	343	165	110	55	30	16	11	1
10	1.4	10	7	95	320	160	105	55	30	15	11	1
11	3.3	9	7.5	69	320	150	110	56	25	15	11	1
12	3.6	7	7	29	309	165	139	56	25	15	11	9
13	3.3	7	7	23	298	150	115	56	25	15	11	9
14	4.2	6	12	55	277	148	105	56	25	15	11	9
15	4.5	5.5	42	81	258	160	110	57	25	14	11	9
16	4.2	6	13	664	258	150	105	57	26	14	11	9
17	3.3	6	11	6,080	249	150	109	55	26	14	11	8
18	3.3	5.5	11	7,420	240	145	95	55	27	14	10	8
19	2.4	5.5	9	3,680	224	150	90	60	27	14	10	8
20	2.4	5.5	8.5	2,110	210	170	89	55	27	14	10	8
21	2.0	5.5	9	865	210	199	88	55	27	14	10	8
22	2.4	5.5	8.5	560	198	180	86	55	26	14	10	8
23	2.8	6	9	450	187	210	85	50	26	13	10	8
24	2.8	6	9	400	182	180	83	45	25	13	10	8
25	3.3	6	7	668	190	165	82	45	24	13	10	8
26	2.6	6	8	611	205	150	80	45	24	13	10	8
27	2.4	6	7	14,100	210	165	77	45	23	13	9	9
28	1.4	6	7.5	9,740	245	158	75	40	22	13	9	9
29	1.4	6	11	2,540	320	165	72	40	22	13	8	9
30	1.8	6.5	21	1,160	.....	151	70	40	21	12	8	9
31	2.4	.....	20	865	.....	145	.....	39	.....	12	8	.....
1916–17.												
1	25	11	12	75	25	95	35	33	29	8	5	1.2
2	50	11	18	80	30	80	30	33	26	7.5	4.8	1.2
3	30	11	25	131	32	70	28	33	23	7.5	4.5	.9
4	20	12	20	80	28	80	26	29	21	7.5	4.0	.9
5	20	15	16	45	26	75	26	29	20	7.5	3.0	1.2
6	30	15	17	23	25	70	27	30	20	7.5	2.5	1.2
7	25	14	15	21	26	65	29	34	20	7.5	2.5	1.3
8	20	13	11	23	27	60	27	30	19	7	2.5	1.0
9	20	13	12	23	25	65	34	34	18	6.5	2.4	.7
10	25	12	12	21	26	110	45	32	18	6.5	3.5	.9
11	20	12	12	21	25	70	34	29	16	6	3.5	.9
12	20	12	15	24	27	60	33	26	16	4.8	3.5	.9
13	15	11	15	60	27	60	32	25	15	4.5	3.2	1.3
14	12	11	9	30	25	60	32	23	13	4.0	3.0	1.3
15	10	11	10	37	25	60	32	22	11	4.0	2.4	1.0
16	10	12	11	101	25	60	235	22	10	4.0	2.4	.9
17	12	11	12	50	80	60	128	18	9.5	4.5	2.4	.6
18	15	11	12	83	90	55	68	38	8.5	4.2	2.4	.6
19	13	13	13	170	100	50	57	39	8.5	4.0	2.4	.5
20	10	15	14	140	125	47	47	33	8	4.0	2.2	4.0
21	10	14	16	116	120	48	43	38	8	3.8	2.2	55
22	9	13	15	80	700	49	39	32	7.5	4.0	2.0	2.9
23	11	13	12	50	1,130	49	34	32	7	4.2	2.2	1.7
24	13	14	260	50	205	50	33	48	6.5	8	2.2	1.8
25	9	15	102	47	235	47	32	71	7	6	2.0	1.6
26	9	15	40	44	170	43	32	45	6.5	5.5	1.9	2.0
27	11	15	35	41	135	41	47	36	6.5	6.5	1.8	2.9
28	11	15	36	38	115	40	40	32	6.5	5.5	1.6	1.7
29	13	12	39	33	.....	36	47	33	7	5	1.8	1.6
30	14	11	48	28	.....	39	39	32	7.5	5	1.4	1.6
31	13	.....	55	22	.....	40	.....	32	.....	5	1.3	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek, near Ramona, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	1.5	2.2	4.7	6	12	14	31	12	3.6	1.8	0.9	1.8
2	1.4	2.2	4.4	6	11	13	32	12	3.3	1.5	1.0	1.5
3	1.4	2.0	4.7	6	10	11	32	12	3.3	1.8	1.0	1.1
4	1.4	2.3	4.2	6	9.5	9.5	30	12	2.7	2.1	1.1	1.0
5	1.4	2.4	4.2	6.5	9.5	9	28	12	2.4	1.8	1.3	.9
6	1.4	5.5	4.4	6	8.5	13	27	12	2.1	2.1	1.5	.8
7	1.4	19	5	6	9.5	128	27	12	2.1	2.1	2.4	1.0
8	1.6	13	4.4	6	9.5	121	25	12	1.8	1.8	3.6	1.1
9	1.4	8	4.0	6	9	22	22	16	1.5	1.5	1.3	1.1
10	2.0	5.5	4.7	6.5	7.5	14	23	14	1.3	1.5	1.1	1.1
11	1.8	5.5	4.7	6.5	7	580	23	13	1.1	1.1	1.3	.9
12	2.9	5.5	5	6.5	7.5	1,300	23	12	1.0	1.0	1.1	.8
13	3.0	5.5	5	54	8	420	25	12	1.1	1.0	1.3	.8
14	3.7	5.5	5.5	17	8.5	131	23	12	1.8	1.1	1.1	.8
15	5	5.5	5.5	10	8.5	90	21	10	2.7	1.1	1.5	1.3
16	5.5	5.5	5	10	9	60	20	9	2.4	1.0	1.8	1.8
17	4.7	5	5	9	9.5	55	18	7.5	2.1	1.1	2.7	1.8
18	4.0	4.0	5	8.5	50	50	16	6.5	1.8	1.3	1.8	2.1
19	2.3	2.6	5	7.5	29	140	13	6	2.1	1.5	2.2	1.3
20	2.2	2.3	5.5	7	22	185	13	6	2.4	1.8	1.5	1.1
21	2.2	2.6	5	7.5	17	90	20	5.5	2.4	1.5	.9	.8
22	2.2	2.9	4.7	7	60	75	18	4.6	2.4	1.8	.4	.7
23	2.3	4.4	4.7	6	31	70	18	5	2.4	1.5	.4	.5
24	2.4	5	4.7	7	20	65	15	4.6	2.7	1.5	.4	.9
25	2.6	5	5.5	15	22	50	15	4.6	3.0	1.5	.2	1.1
26	2.8	5	6	48	20	42	14	5	3.3	1.3	.2	1.1
27	2.6	5	6	31	17	41	15	4.6	3.6	1.1	1.2	1.1
28	2.4	5	6	18	15	43	13	6.5	3.0	1.1	.5	1.1
29	2.6	5	6	12	.....	42	14	33	2.4	1.1	.4	1.0
30	2.6	5	6	12	.....	34	12	12	1.8	.9	.7	1.0
31	2.2	.....	6.5	12	.....	32	.....	4.2	.....	.8	1.8	.....

NOTE.—Daily discharge determined as follows: 1912, Feb. 5 to Sept. 30, 1912, from rating curves well defined above 3 second-feet.

1912–13: Oct. 1, 1912, to June 3, 1913, from well-defined rating curves; June 4 to Sept. 30, by shifting-control method and interpolation between measurements.

1913–14: Oct. 1 to Nov. 12, 1913, estimated from measurements; very little change in stage; Nov. 13, 1913, to Sept. 30, 1914, when shifting-control method was used, except Mar. 28 to May 1, 1914, from well-defined rating curve.

1914–15: Oct. 1, 1914, to Feb. 11, 1915, from well-defined curve; Feb. 12–19, 1915, by shifting-control method; Feb. 20 to May 5, from an average rating curve well defined; May 6–31, 1915, by shifting-control method; June 1 to Sept. 30, from well-defined rating curve.

1915–16: Oct. 1 to Dec. 31, 1915, from well-defined rating curve; Jan. 1–15, 1916, gage-height record lost; discharge estimated from record obtained at Mesa Grande; Jan. 16–31, computed from hydrograph; Feb. 1–24, well-defined rating curve; Feb. 25 to Sept. 30, from fairly well defined rating curves covering short periods, computed by shifting-control method and by interpolation between discharge measurements.

1916–17: Oct. 1 to Dec. 7, 1916, estimated from discharge measurements and record obtained at Mesa Grande; Dec. 24, 1916, to Jan. 2, 1917, Jan. 19 to Apr. 15, and May 18–23, from fairly well-defined rating curves applicable for short periods and by shifting-control method. Jan. 13, 1917, gage not read; discharge estimated.

1917–18: Two rating curves used, Oct. 1, 1917, to Mar. 11, 1918, are fairly well defined. Discharges Mar. 12–13 and 15–25 computed from record obtained at Mesa Grande; remainder of year computed from fairly well defined curves covering short periods. Record Mar. 12–25, poor.

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Monthly discharge of Santa Ysabel Creek near Ramona, Calif., for 1912–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1912.				
February 5–29	4.8	1.9	3.62	180
March	278	9.5	46.7	2,870
April	252	30	75.0	4,460
May	106	16	35.4	2,180
June	14	4	9.22	549
July	9	.8	2.90	178
August	1.6	.04	.37	22.8
September	.6	.02	.19	11.3
The period	.....	.....	.....	10,500
1912–13.				
October	25	.05	4.29	264
November	3.5	1	2.38	142
December	4.5	3.5	3.77	232
January	39	3	7.68	472
February	123	5.5	24.3	1,350
March	72	19	29.0	1,780
April	30	9.5	15.4	916
May	10	5.0	7.19	442
June	5.5	1	2.60	155
July	.5	.05	.19	12
August	.2	.05	.10	6
September	.3	.1	.19	11
The year	123	.05	7.99	5,780
1913–14.				
October	.1	.1	.10	6
November	28	.1	3.33	198
December	18	1.5	4.53	279
January	1,140	4	82.4	5,070
February	1,490	19	153	8,500
March	94	25	40.5	2,490
April	64	14	27.2	1,620
May	32	11	17.9	1,100
June	22	2.0	8.77	522
July	1.5	.1	.32	20
August	.1	.1	.10	6
September	.1	.1	.10	6
The year	1,490	.1	27.3	19,800
1914–15.				
October	1.6	.1	.57	35
November	18	.2	2.10	125
December	12	3.8	6.45	397
January	915	4.6	70.2	4,320
February	1,250	62	259	14,400
March	412	58	122	7,500
April	412	38	81.6	6,860
May	850	73	221	13,600
June	74	27	47.0	2,800
July	26	9	15.6	959
August	110	2.5	9.26	569
September	5.5	1.5	3.90	232
The year	1,250	.1	68.7	49,800
1915–16.				
October	4.5	1.4	2.75	169
November	10	2.4	6.05	360
December	42	6.5	12.2	750
January	14,100	7	1,690	104,000
February	754	182	345	19,800
March	300	145	182	11,200
April	140	70	102	6,070
May	67	39	54.3	3,340
June	38	21	28.2	1,680
July	20	12	14.9	916
August	12	8	10.5	646
September	10	8	8.6	512
The year	14,100	1.4	206	149,000

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Monthly discharge of Santa Ysabel Creek near Ramona, Calif., for 1912–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1916–17.				
October	50	9	16.9	1,040
November	15	11	12.8	762
December	260	9	30.3	1,860
January	170	21	57.5	3,540
February	1,130	25	130	7,220
March	110	36	59.2	3,640
April	235	26	46.4	2,760
May	71	18	32.8	2,020
June	29	6.5	13.3	791
July	8	3.8	5.66	348
August	5	1.3	2.66	164
September	55	.5	3.15	187
The year	1,130	0.5	33.6	24,300
1917–18.				
October	5.5	1.4	2.48	152
November	19	2.0	5.13	305
December	6.5	4.0	5.06	311
January	54	6	12.0	738
February	50	7	16.3	905
March	1,300	9	127	7,810
April	32	12	20.9	1,240
May	33	4.2	9.99	614
June	3.6	1.0	2.32	138
July	2.1	.8	1.42	87.3
August	3.6	.2	1.25	76.9
September	2.1	.5	1.11	66
The year	1,300	.2	17.2	12,400

SANTA YSABEL CREEK NEAR ESCONDIDO, CALIF.

LOCATION.—In SW. ¼ sec. 31, T. 12 S., R. 1 E., at mouth of canyon at upper end of San Pasqual Valley, about 10 miles southest of Escondido, San Diego County. Roden Canyon Creek enters 1½ miles above and Santa Maria Creek 4 miles below station.

DRAINAGE AREA.—128 square miles (measured on topographic maps).

ELEVATION.—About 500 feet above sea level.

RECORDS AVAILABLE.—January 1, 1906, to September 30, 1912.

GAGE.—Inclined staff fastened to large boulder on left bank at mouth of canyon. Original datum was maintained.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Sand; very shifting.

EXTREMES OF DISCHARGE.—1906–1912: Maximum stage recorded March 24, 1906 (discharge, 8,000 second-feet); no flow for at least a few days each season from 1908 to 1912.

DIVERSIONS.—No large diversions above the station. East and West San Pasqual ditches divert below the station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Several fairly well defined rating curves were developed covering short periods. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating tables by shifting-control method and by interpolation between discharge measurements. Records fair, the degree of accuracy depending principally on the number of discharge measurements obtained during the season.

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Discharge measurements of Santa Ysabel Creek near Escondido, Calif., for 1905–1912.

[By W. V. Hardy, F. C. Ebert, and others.]

Date.	Gage height.	Discharge.
1905.	*Feet.*	*Sec.-ft.*
Nov. 21		4.5
28	3.72	41
Dec. 21	3.55	10.4
1906.		
Jan. 10	3.56	4.2
30	3.55	13.5
Feb. 8	3.57	17.8
11	3.64	25
22	3.70	44
Mar. 8	3.70	28
15	3.75	158
23	3.52	132
26	4.00	5,300
26	2.65	3,240
26	2.00	2,040
27	1.00	916
27	.85	870
27	.70	900
28	.50	713
Apr. 14	1.00	183
25	1.45	116
30	1.82	151
May 12	2.18	88
June 24	2.35	25
Aug. 10	2.45	3.7
Oct. 3	2.46	2.6
Nov. 30	2.54	15
Dec. 7	2.64	10.8
20	2.70	10
1907.		
Jan. 1	2.80	60
22	2.05	127
28	1.90	101
30	2.20	311
30	2.30	242
Feb. 12	1.90	67
16	1.99	62
21	2.05	55
Mar. 12	2.18	97
15	2.10	111
Apr. 2	2.00	177
6	1.95	146
15	1.90	95
19	1.90	82
May 4	2.00	61
10	2.02	58
21	1.99	40
24	1.99	42
June 4	2.01	28
7	2.06	35
17	2.02	22
July 19	2.02	5.7
Dec. 13	2.28	12
21	2.28	10
29	2.32	15
1908.		
Jan. 4	2.30	11
13	2.30	10
18	2.27	10
23	2.30	14
29	2.50	71
30	2.40	44
Feb. 8	2.24	43
17	2.19	60
21	2.12	42
26	2.06	37
Mar. 2	2.05	41
5	2.20	91
6	2.10	72
14	1.95	30
19	1.98	26
1908.	*Feet.*	*Sec.-ft.*
Mar. 25	1.92	29
31	1.91	25
Apr. 7	1.91	23
12	1.87	18
18	1.86	14
25	1.85	34
29	1.80	16
May 4	1.84	21
14	1.82	20
20	1.78	10
22	1.77	11
29	1.77	9.2
June 4	1.77	8.2
June 10	1.73	5.6
14	1.72	4.9
July 6	1.61	.31
Nov. 11	1.70	1.8
26	1.77	5.6
Dec. 3	1.80	8.1
11	1.78	3.8
16	1.83	4.8
24	1.80	5.4
1909.		
Jan. 19	1.87	11
28	.76	156
Feb. 1	.54	85
4	.90	173
5	.78	153
6	.68	101
8	1.10	325
8	1.02	284
9	.84	260
9	.87	238
17	.98	129
28	.93	154
Mar. 4	1.15	96
13	1.25	86
18	1.28	82
26	1.32	89
27	1.80	342
27	1.70	265
28	1.60	214
28	1.55	288
28	1.51	191
29	1.40	173
Apr. 5	1.40	115
10	1.35	100
15	1.28	63
24	1.23	44
May 24	1.20	31
Dec. 23	1.22	83
1910.		
Jan. 11	.60	105
31	.51	66
Feb. 11	.57	44
19	.60	46
22	.67	53
23	.69	56
Mar. 6	.72	31
10	.76	34
22	.80	39
31	.96	57
Apr. 4	.94	42
8	.90	42
15	.90	34
28	.86	18
May 5	.87	20
16	.84	10
30	.75	4.2
June 2	.79	5.7
8	.77	3.3
30	.74	1.3
Nov. 25	.80	2.9

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Discharge measurements of Santa Ysabel Creek near Escondido, Calif., for 1905–1912—Continued.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1911.	*Feet.*	*Sec.-ft.*	1912.	*Feet.*	*Sec.-ft.*
Feb. 7	0.80	59	Mar. 8	0.26	22
Mar. 5	.87	140	Apr. 1	.12	49
Apr. 11	.48	48	12	.75	266
May 10	.25	17	22	.18	62
June 26	.10	2.4	May 8	.10	53
Oct. 15	.06	[a] 2	15	.00	36
1912.			28	—.06	21
Jan. 22	.12	3.7	June 22	—.14	5.1
Feb. 8	.14	4.2	July 13	—.19	1.0
Mar. 6	.47	47	Aug. 3	—.33	[a] 2

[a] Estimated.

Daily discharge, in second-feet, of Santa Ysabel Creek near Escondido, Calif., for 1907-1912.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1				60	110	50	170	65	32	15	5	5
2				50	110	50	177	64	31	15	5	5
3				45	100	50	200	62	29	14	5	5
4				40	98	75	180	61	28	14	5	5
5				60	95	250	160	60	30	13	5	5
6				165	90	175	146	60	32	13	5	5
7				115	85	150	140	59	35	12	5	5
8				100	80	125	140	59	34	12	5	5
9				145	80	110	125	58	32	11	5	5
10				265	75	100	115	58	31	11	5	5
11				125	70	100	110	56	30	10	5	5
12				160	67	97	110	55	28	10	5	5
13				280	60	100	105	53	27	9	5	5
14				200	60	100	100	51	26	9	5	5
15				200	60	111	95	50	25	8	5	5
16				200	62	110	100	48	23	8	5	6
17				250	60	110	90	46	22	7	5	6
18				500	60	110	85	45	22	7	5	6
19				200	55	110	82	43	21	6	5	6
20				175	55	175	80	42	21	6	5	6
21				150	55	175	79	40	20	5	5	6
22				127	80	180	78	40	20	5	5	6
23				125	70	170	76	41	19	5	5	6
24				120	60	160	75	42	19	5	5	6
25				115	50	290	74	41	18	5	5	6
26				110	60	175	72	40	18	5	5	6
27				105	60	200	70	38	17	5	5	6
28				101	60	185	70	37	17	5	5	6
29				130	.....	170	68	36	16	5	5	6
30				276	.....	160	67	34	16	5	5	6
31				125	.....	160	.....	33	.....	5	5	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Escondido, Calif., for 1907-1912—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907-8.												
1	6	10	10	11	48	47	25	16	9	0.5	0	0
2	6	9	10	11	43	41	25	16	8	.6	0	0
3	6	9	10	11	146	42	23	25	8	1.0	0	0
4	6	9	10	11	56	82	22	21	8.2	.2	0	0
5	6	9	10	11	50	82	23	17	8	.6	0	0
6	8	10	10	11	46	72	23	17	8	.3	0	0
7	6	10	15	11	48	54	23	18	7	.4	0	0
8	6	10	15	11	67	51	21	16	8	.1	0	0
9	6	10	15	11	77	49	20	16	4	.2	0	0
10	6	12	15	11	80	46	19	17	5.6	.0	0	0
11	6	10	12	11	51	43	15	18	5.6	.0	0	0
12	6	10	12	11	54	41	18	21	5.6	.0	0	0
13	6	10	12	11	65	38	12	21	4	.1	0	0
14	6	10	12	12	61	30	14	20	4.9	.0	0	0
15	7	12	12	11	56	35	14	17	5	.0	0	0
16	7	12	12	11	59	33	13	14	5	.0	0	0
17	15	12	11	11	60	22	14	12	3	.0	0	0
18	8	12	11	10	45	25	14	8	5	.0	0	0
19	7	10	11	10	43	26	15	10	5	.0	0	0
20	7	10	10	11	42	21	16	10	5	.0	0	0
21	7	10	10	12	42	23	19	11	4	.0	0	0
22	7	10	10	13	40	20	30	11	4	.0	0	0
23	15	10	11	14	47	20	44	7	4	.0	0	0
24	12	10	11	71	41	22	37	10	3	.0	0	0
25	10	10	12	136	37	23	34	13	3	.0	0	0
26	10	10	12	42	37	30	25	9	3	.0	0	0
27	10	10	13	42	37	47	21	6	2	.0	0	0
28	12	10	14	87	44	28	17	9	1	.0	0	0
29	12	10	15	71	46	25	16	9.2	3	.0	0	0
30	10	10	15	44	.....	26	15	5	3	.0	0	0
31	10	.....	15	44	.....	25	.....	5	.....	.0	0	.....
1908-9.												
1	.1	1.0	4	5	65	140	125	41	27	22	8	3
2	.1	1.0	8	5	65	125	125	41	27	22	4	4
3	.2	1.0	17	5	65	110	120	40	27	22	8	4
4	.5	1.0	8	5	173	96	120	40	26	14	8	4
5	.5	1.5	8	5	153	95	115	39	26	14	8	4
6	.5	1.5	7	8	101	94	110	39	26	22	4	14
7	.2	1.5	7	8	135	93	105	38	25	22	8	14
8	.1	1.6	7	8	360	92	105	38	25	14	8	8
9	.1	1.6	6	8	250	91	105	38	25	14	8	4
10	.0	1.7	6	8	270	90	100	37	25	14	8	4
11	.0	1.8	5	5	310	89	93	37	24	14	4	4
12	.2	1.8	2	8	410	88	85	36	24	14	4	4
13	.5	1.8	2	40	490	86	78	36	24	14	4	2
14	.2	1.8	2	65	290	85	70	35	24	8	3	2
15	.5	1.8	3	15	190	84	63	35	24	8	4	2
16	.5	1.8	3	15	120	83	60	35	24	8	4	1
17	1.0	2.0	3	11	130	83	58	34	22	8	4	0
18	2.0	4.0	3	11	130	82	56	34	22	14	4	0
19	1.0	4.0	4	11	130	90	54	33	22	14	4	0
20	1.0	3.3	4	11	90	80	52	33	22	4	4	0
21	1.0	3.3	9	35	800	90	50	32	22	3	2	0
22	1.0	3.3	9	6,500	220	110	48	32	22	4	4	0
23	1.0	5.0	5	1,000	210	180	46	31	22	8	2	0
24	1.0	5.0	5.4	200	200	155	44	31	22	4	4	4
25	1.0	5.0	5.4	160	185	130	44	31	22	4	4	8
26	.5	5.0	5.4	160	175	89	43	30	22	8	4	8
27	.5	5.0	5.4	320	165	340	43	30	22	14	4	8
28	.5	3.0	5.4	156	154	230	42	29	20	8	2	8
29	1.0	5.0	5.4	110	.....	173	42	29	18	8	0	8
30	1.0	5.0	5.4	90	.....	140	42	28	14	8	8	8
31	1.0	.....	5.4	85	.....	130	.....	28	.....	8	20	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Escondido, Calif., for 1907-1912—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10.												
1	8	8	32	3,100	64	45	50	19	5	1	.....	.....
2	8	4	32	1,320	62	41	47	19	6	1	.....	.....
3	8	4	32	1,020	60	39	44	20	5	.5	.....	.....
4	8	4	32	690	58	35	42	20	5	.5	.....	.....
5	14	4	52	390	56	33	42	20	4	.5	.....	.....
6	8	4	96	170	54	31	42	19	4	.5	.....	.....
7	8	4	75	155	52	31	42	18	3	.5	.....	.....
8	4	8	52	155	50	32	42	17	3	.5	.....	.....
9	4	8	400	140	48	33	45	16	3	.....	.....	.....
10	4	14	200	125	46	34	42	15	3	.....	.....	.....
11	4	22	96	105	44	35	42	14	3	.....	.....	.....
12	4	22	75	105	44	35	62	13	3	.....	.....	.....
13	4	14	75	105	44	36	60	12	3	.....	.....	.....
14	4	14	75	90	45	36	62	11	3	.....	.....	.....
15	4	52	52	105	45	36	56	10	3	.....	.....	.....
16	4	22	52	340	45	37	49	10	2	.....	.....	.....
17	4	14	52	170	46	37	48	10	2	.....	.....	.....
18	8	14	52	105	46	37	47	9	2	.....	.....	.....
19	8	14	52	100	46	38	45	8	2	.....	.....	.....
20	8	14	120	90	48	38	40	7	2	.....	.....	.....
21	4	14	700	70	50	38	33	7	2	.....	.....	.....
22	4	14	60	65	53	39	29	7	2	.....	.....	.....
23	4	14	83	65	56	40	19	6	1	.....	.....	.....
24	4	22	60	65	58	40	21	6	1	.....	.....	.....
25	4	14	40	65	54	40	22	6	1	.....	.....	.....
26	4	52	30	65	52	42	22	5	1	.....	.....	.....
27	4	32	30	65	53	51	23	5	1	.....	.....	.....
28	4	32	30	65	49	90	18	4	1	.....	.....	.....
29	8	22	20	65	.....	70	18	4	1	.....	.....	.....
30	8	32	20	65	.....	54	18	4	1	.....	.....	.....
31	8	.....	20	66	.....	57	.....	4	.....	.....	.....	.....

Day.	Apr.	May.	June.	July.	Day.	Apr.	May.	June.	July.
1911.					1911.				
1	.....	29	14	2.4	16	35	17	8.1	.....
2	.....	22	12	2.4	17	33	13	8.9	.....
3	.....	23	15	1.9	18	36	10	6.4	.....
4	.....	25	16	2.4	19	36	16	7.3	.....
5	.....	16	10	1.9	20	35	8.9	7.3	.....
6	.....	17	10	1.0	21	32	9.7	9.7	.....
7	.....	19	8.9	.....	22	36	8.9	10	.....
8	.....	19	9.7	.....	23	35	10	4.8	.....
9	.....	16	6.4	.....	24	35	16	5.6	.....
10	.....	16	8.1	.....	25	32	14	3.2	.....
11	49	16	9.7	.....	26	32	13	4.0	.....
12	52	17	9.7	.....	27	36	10	2.4	.....
13	47	19	7.3	.....	28	36	10	3.2	.....
14	36	16	6.4	.....	29	36	13	2.4	.....
15	44	20	5.6	.....	30	32	16	2.4	.....
					31	.....	14	.....	.....

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Daily discharge, in second-feet, of Santa Ysabel Creek near Escondido, Calif., for 1907–1912—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1911-12.											
1	.....	1.0	2.4	10	5	5	51	40	12	6.5	0.3
2	.....	1.0	2.4	10	5	20	63	30	12	6.5	.3
3	.....	1.0	2.4	10	5	5	51	40	12	12	.0
4	.....	1.0	3.2	10	10	5	51	30	6.5	6.5	.0
5	.....	1.0	3.2	10	10	10	51	30	12	6.5	.0
6	.....	1.0	8.1	5	5	5	40	30	21	6.5	.0
7	.....	1.0	10	5	5	38	40	30	12	6.5	.0
8	.....	1.0	8.9	5	5	24	30	51	12	6.5	.....
9	.....	1.0	6.4	5	5	30	51	75	12	6.5	.....
10	.....	1.0	3.2	10	5	630	75	75	12	6.5	.....
11	.....	1.0	4.0	10	5	133	315	63	12	1	.....
12	.....	1.0	2.4	5	5	118	315	51	12	6.5	.....
13	.....	1.4	1.9	5	5	315	205	51	12	1	.....
14	.....	1.9	1.9	5	5	118	168	40	12	.6	.....
15	0.2	2.4	2.4	5	5	118	168	30	12	6.5	.....
16	.05	2.4	3.2	10	5	118	168	30	12	6.5	.....
17	.05	3.2	4.0	10	5	102	150	30	6.5	1	.....
18	.05	2.4	4.0	10	2	102	102	30	12	6.5	.....
19	.05	1.9	2.4	10	5	102	88	21	12	30	.....
20	.05	6.4	2.4	10	2	102	75	21	6.5	1	.....
21	.05	6.4	3.2	10	2	102	63	21	6.5	1	.....
22	.05	5.6	10	5	5	102	63	21	6.5	1	.....
23	.05	4.0	12	2	5	88	63	21	6.5	1	.....
24	.05	2.4	9.7	5	5	88	51	21	6.5	1	.....
25	.05	2.4	8.1	5	5	88	51	21	6.5	.6	.....
26	.05	2.4	6.4	5	5	102	51	21	6.5	.6	.....
27	.05	1.9	6.4	10	5	102	51	21	6.5	.6	.....
28	.05	1.4	7.3	10	5	102	51	21	6.5	.3	.....
29	.05	.0	10	10	5	133	51	21	6.5	.6	.....
30	.05	1.4	12	10	.....	205	51	12	6.5	.3	.....
31	.05	.....	9.7	5	.....	150	.....	12	.....	.3	.....

NOTE.—Daily discharge determined as follows: 1907 to 1911 from rating curves covering short periods and by shifting-control method.

1911-12: Oct. 16 to Nov. 12, 1911, estimated; Jan. 1 to Mar. 9, 1912, from fairly well-defined rating curves; Mar. 10 to Aug. 2, 1912, from rating curve well defined above 10 second-feet.

Stream dry on days for which discharge is not given except Jan. 1 to Apr. 10, 1911, when no record was obtained. Maximum discharge, Jan. 22, 1909, was 6,890 second-feet. Maximum discharge Jan. 1, 1910, was 3,950 second-feet.

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Monthly discharge of Santa Ysabel Creek near Escondido, Calif., for 1906–1912.

[Drainage area, 128 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1906.						
January	83	2	11.4	0.089	0.10	701
February	95	8	30.5	.238	.25	1,690
March	8,000	29	633	4.94	5.70	38,900
April	400	102	221	1.73	1.93	13,200
May	90	35	69.7	.545	.63	4,280
June	35	23	28.4	.222	.25	1,690
July	30	5	12.4	.097	.11	762
August	6	4	4.2	.033	.04	258
September	4	3	3.1	.024	.03	184
The period	.....	.....	.....	.....	.....	61,700
1906–7.						
October	7	3	4.7	.037	.04	289
November	15	6	9.6	.075	.08	571
December	21	11	12.4	.097	.11	762
January	500	40	155	1.21	1.40	9,530
February	110	50	72.4	.566	.59	4,020
March	290	50	138	1.08	1.24	8,480
April	200	67	108	.844	.94	6,430
May	65	33	49	.383	.44	3,010
June	35	16	24.6	.192	.21	1,460
July	15	5	8.6	.067	.08	529
August	5	5	5.0	.039	.04	307
September	6	5	5.5	.043	.05	327
The year	500	3	49.4	.386	5.22	35,700
1907–8.						
October	15	6	8.1	.063	.07	498
November	12	9	10.2	.080	.09	607
December	13	10	12	.093	.11	738
January	136	10	25.6	.200	.23	1,570
February	146	37	54.1	.423	.46	3,110
March	82	20	37.7	.294	.34	2,320
April	44	12	20.9	.163	.18	1,240
May	25	5	13.7	.107	.12	842
June	9	1	5.06	.040	.04	301
July	1	0	.129	.0010	.001	8
August	0	0	.0	.00	.00	0
September	0	0	.0	.00	.00	0
The year	146	0	15.6	.122	1.64	11,200
1908–9.						
October	2	0	.603	.0047	.005	37
November	5	1	2.74	.021	.02	163
December	17	2	5.65	.044	.05	347
January	6,500	5	293	2.29	2.64	18,000
February	800	65	216	1.69	1.76	12,000
March	340	80	118	.922	1.06	7,260
April	125	42	74.8	.584	.65	4,450
May	41	28	34.5	.270	.31	2,120
June	27	14	23.2	.181	.20	1,380
July	22	3	11.7	.091	.10	719
August	29	0	5.32	.042	.05	327
September	14	0	4.33	.034	.04	258
The year	6,500	0	65.8	.514	6.89	47,100
1909–10.						
October	14	4	5.87	.046	.05	361
November	52	4	17.1	.134	.15	1,020
December	700	20	90.2	.705	.81	5,550
January	3,100	65	300	2.34	2.70	18,400
February	64	44	51.0	.398	.41	2,830
March	90	31	41.3	.323	.37	2,540
April	62	18	39.1	.305	.34	2,330
May	20	4	11.4	.089	.10	701
June	6	1	2.6	.020	.02	155
July	1	0	.16	.001	.001	10
August	0	0	.0	.0	.0	0
September	0	0	.0	.0	.0	0
The year	3,100	0	46.6	.364	4.95	33,900

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Monthly discharge of Santa Ysabel Creek near Escondido, Calif., for 1906–1912—Contd.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910–11.						
October	0	0	0.0	0.0	0.0	0
November	0	0	.0	.0	.0	0
December	0	0	.0	.0	.0	0
April 11-30	52	32	37.2	.291	.22	1,480
May	29	8.9	15.8	.123	.14	972
June	16	2.4	7.82	.061	.07	465
July	2.4	.0	.39	.003	.004	24
August	.0	.0	.0	.0	.0	0
September	.0	.0	.0	.0	.0	0
1911–12.						
October	.....	.0	.032	.....	.....	2.0
November	6.4	.0	2.06	.....	.....	123
December	12	1.9	5.60	.....	.....	344
January	10	5	7.65	.....	.....	470
February	10	2	5.03	.....	.....	289
March	630	5	108	.....	.....	6,640
April	315	30	93.4	.....	.....	5,560
May	75	12	32.6	.....	.....	2,000
June	21	6.5	9.92	.....	.....	590
July	30	.3	4.46	.....	.....	274
August	.3	.0	.019	.....	.....	1.2
September	.0	.0	.0	.....	.....	.0
The year	630	.0	22.5	.....	.....	16,300

SAN DIEGUITO RIVER AT BERNARDO, CALIF.

LOCATION.—In San Bernardo grant, at highway bridge at Bernardo, San Diego County, 5 miles below junction of Santa Ysabel and Santa Maria creeks, and 16 miles above mouth of river.

DRAINAGE AREA.—266 square miles (measured on topographic maps).

ELEVATION.—About 300 feet above sea level.

RECORDS AVAILABLE.—April 17, 1912, to January 16, 1916.

GAGE.—Chain gage fastened to upstream guard rail of bridge over main channel near left bank; length of chain 23.18 feet. Original datum was maintained.

DISCHARGE MEASUREMENTS.—Made from cable 30 feet above gage, from highway bridge, or by wading.

CHANNEL AND CONTROL.—Sand; shifting. At flood stages water overflows left bank.

EXTREMES OF DISCHARGE.—1912–1916: Maximum stage recorded, 21 feet January 16, 1916 (discharge, 11,000 second-feet); no flow for several months each year except for a small quantity of ground water that rises to surface above the bridge.

DIVERSIONS.—East and West San Pasqual ditches divert water for irrigation from Santa Ysabel Creek at the upper end of San Pasqual Valley (see Santa Ysabel Creek near Ramona, p. 125). Water for irrigation is also pumped from wells along the river.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined except for flood stages. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables, by shifting-control method, or by interpolation between discharge measurements for periods when the change in stage was slight. Records fair.

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Discharge measurements of San Dieguito River at Bernardo, Calif., for 1912–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-feet*
Apr. 17	F. C. Ebert	10.29	125	Apr. 3	R. W. Day	10.58	34
22	H. L. Davis	9.92	66	17	do	10.28	3.3
May 2	F. C. Ebert	9.48	14	18	F. C. Ebert	10.19	.4
8	do	9.88	53	Apr. 24	R. W. Day	10.62	23
15	E. W. Case	9.80	37	May 8	do	10.53	13
23	F. C. Ebert	9.51	16	14	F. C. Ebert	10.27	.8
June 8	W. S. Post	9.19	.6				
June 23	E. W. Case	9.15	.2	1915.			
July 1	F. C. Ebert	9.11	a .2	Jan. 26	F. C. Ebert	10.18	a .1
13	do	9.10	a .1	31	K. B. Sleppy	11.83	382
Aug. 3	E. W. Case	9.08	a .04	Feb. 10	F. C. Ebert	14.47	1,580
13	F. C. Ebert	8.95	.0	11	do	15.75	3,110
Sept. 24	do		.0	12	do	12.81	861
Dec. 16	do	9.30	.3	Mar. 2	do	12.16	470
				3	do	11.71	368
1913.				10	do	11.35	230
Jan. 20	F. C. Ebert	9.30	a .1	27	do	10.40	64
Mar. 12	do	9.75	25	Apr. 6	do	10.50	58
19	do	9.62	13	10	R. W. Day	10.21	30
Apr. 10	do	9.40	.8	May 6	C. E. Hickok	12.52	683
May 12	do	9.38	.1	17	F. C. Ebert	10.89	158
June 16	do	9.36	.05	20	do	11.01	156
				July 6	W. E. Keenan	9.70	2.6
1914.				7	F. C. Ebert	9.67	.8
Jan. 18	F. C. Ebert	9.31	.10	Dec. 10	do	9.53	.1
30	R. W. Day	10.24	59	18	do	9.81	7.4
31	F. C. Ebert	10.15	38				
Feb. 3	do	9.99	19	1916.			
16	Hickok and Shell	9.70	2.9	Jan. 24	R. W. Day	11.26	281
21	C. E. Hickok	15.62	2,430	24	do	11.33	589
Mar. 2	F. C. Ebert	10.68	84	Feb. 22	F. C. Ebert	5.62	298
6	R. W. Day	10.60	55	Apr. 12	do	1.95	158
23	F. C. Ebert	10.38	23				

a Estimated.

Daily discharge, in second-feet, of San Dieguito River at Bernardo, Calif., for 1912–1916.

Day.	Apr	May	June.	Day.	Apr.	May.	June.	Day.	Apr.	May.	June.
1912.				1912.				1912.			
1		20	0.7	11		107	0.8	21	71	19	0.3
2		12	.5	12		85	.8	22	59	21	.3
3		6.5	.7	13		71	.7	23	56	11	.3
4		2.1	1.0	14		58	.7	24	50	5.0	.3
5		1.3	1.0	15		41	.7	25	46	4.5	.3
6		1.8	.7	16		30	.7	26	38	3.6	.3
7		28	.7	17	127	24	.7	27	36	2.1	.3
8		59	.8	18	109	19	.3	28	34	2.1	.3
9		192	.8	19	90	23	.3	29	31	2.5	.2
10		127	.8	20	78	23	.3	30	30	1.3	.2
								31		1.3	

Day.	Feb.	Mar.	Apr.	May.	Date.	Feb.	Mar.	Apr.	May.
1912–13.					1912–13.				
1	0.2	36	30	0.4	16	0.2	16	0.8	0.1
2	.2	25	30	.3	17	.2	12	.8	.1
3	.2	25	30	.3	18	.2	12	.7	.05
4	.2	16	20	.3	19	.2	12	.7	.05
5	.2	12	16	.3	20	.2	12	.7	.05
6	.2	12	12	.2	21	.2	16	.6	.05
7	.2	12	5	.2	22	8	16	.6	.05
8	.2	12	3	.2	23	20	25	.6	.05
9	.2	12	1	.2	24	16	42	.6	.05
10	.2	12	1	.1	25	12	64	.5	.05
11	.2	12	.9	.1	26	72	49	.5	.05
12	.2	20	.9	.1	27	12	42	.5	.05
13	.2	25	.9	.1	28	12	36	.4	.05
14	.2	25	.8	.1	29		30	.4	.05
15	.2	20	.8	.1	30		20	.4	.05
					31		20		.05

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Daily discharge, in second-feet, of San Dieguito River at Bernardo, Calif., 1912–1916—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1913–14.							
1	.....	0.1	33	108	61	52	3
2	.....	.1	45	88	37	52	2
3	.....	.1	23	98	29	42	1
4	.....	.1	19	89	23	36	1
5	.....	.1	15	67	23	35	.5
6	.....	.1	23	55	29	21	.2
7	.....	.1	23	47	23	21	.2
8	.....	.1	23	39	23	11	.2
9	.....	.1	19	16	17	7	.2
10	.....	.1	15	20	12	3	.2
11	.....	.1	12	20	12	2	.2
12	.....	.1	8	20	12	1	.2
13	.....	.1	3	20	12	1	.2
14	.....	.1	3	16	12	1	.2
15	.....	.1	3	16	5	1	.2
16	.....	.1	3	16	5	1	.2
17	.....	.1	6	8	5	16	.2
18	.....	.1	8	8	2	7	.2
19	.....	.1	555	8	2	11	.2
20	0.1	.1	820	8	3	3	.2
21	.1	.1	2,870	8	2	3	.2
22	.1	.1	705	12	14	3	.2
23	..	.1	399	16	72	3	.2
24	.1	.1	211	19	27	2	.2
25	.1	.1	157	18	21	2	.2
26	.1	52	157	22	7	3	.2
27	.1	1,680	132	21	3	3	.2
28	.1	286	108	44	11	2	.1
29	.1	110	.....	48	52	2	0
30	.1	52	.....	155	52	2	0
31	.1	33	.....	95	.....	2	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1914–15.								
1	.....	286	318	68	860	65	5	.....
2	.....	1,060	520	67	905	65	4	.....
3	.....	915	336	57	770	60	4	.....
4	.....	352	267	47	650	60	3	.....
5	.....	334	234	60	1,250	55	3	.....
6	.....	226	230	50	680	50	2.5	.....
7	.....	197	198	46	482	50	1	.....
8	.....	183	180	35	398	45	1	.....
9	.....	183	165	27	366	45	.5	.....
10	.....	1,840	186	29	303	40	.5	.....
11	.....	2,380	220	29	272	35	.5	.....
12	.....	740	170	36	242	35	.4	.....
13	.....	399	148	29	213	30	.4	.....
14	.....	318	139	42	185	30	.3	.....
15	.....	241	120	56	185	25	.3	.....
16	.....	226	112	91	172	20	.2	.....
17	.....	211	104	72	172	20	.2	.....
18	.....	211	97	56	305	20	.2	.....
19	.....	197	100	42	207	15	.1	.....
20	.....	197	92	42	155	15	.1	.....
21	0	399	68	42	145	15	.....	.....
22	.1	211	70	710	140	14	.....	.....
23	.1	183	64	382	130	13	.....	.....
24	.1	183	58	334	120	12	.....	.....
25	.1	241	60	242	115	11	.....	.....
26	.1	271	54	199	110	10	.....	.....
27	.1	226	57	199	100	9	.....	20
28	.1	183	48	199	95	8	.....	5
29	1,080	.....	126	303	85	7	.....	1
30	1,660	.....	100	570	75	6	.....	.5
31	432	.....	88	.....	70	.....	.....	.2

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Daily discharge, in second-feet, of San Dieguito River at Bernardo, Calif., 1912–1916—Continued.

Day.	Dec.	Jan.	Day.	Dec.	Jan.	Day.	Dec.	Jan.
1915-16.			1915-16.			1915-16.		
1	0.5	22	11	0.1	257	21	7	.....
2	.5	22	12	.1	100	22	5	.....
3	.5	27	13	.1	82	23	5	.....
4	8	22	14	.1	74	24	2.5	.....
5	7	22	15	22	230	25	2.5	.....
6	1.5	32	16	18	1,310	26	2.5	.....
7	.3	32	17	10	.....	27	2.5	.....
8	.3	32	18	10	.....	28	2.5	.....
9	.1	32	19	10	.....	29	14	.....
10	.1	45	20	7	.....	30	45	.....
						31	38	.....

NOTE.—Daily discharge determined as follows: 1912: Apr. 17 to June 30, from fairly well defined rating curve.
1913: Feb. 1 to Apr. 10, from well-defined rating curve; Apr. 10 to May 30, 1913, interpolated between measurements.
1914: Jan. 26 to June 28, from rating curves covering short periods and by shifting-control method.
1915: Jan. 29 to Mar. 3, from fairly well-defined rating curve; Mar. 4 to July 20, from rating curves covering short periods and by shifting-control method.
1915–16: Oct. 1, 1915, to Jan. 16, 1916, from curve fairly well defined except for flood stage. No gage-height record Nov. 17 and Dec. 1, 2, and 3, 1915—discharge estimated.

Monthly discharge of San Dieguito River at Bernardo, Calif., for 1912–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912.					1913-14.				
April 17-30	127	30	61.1	1,700	February	2,870	3	229	12,700
May	192	1.3	32.4	1,990	March	155	8	39.1	2,400
June	1.0	.2	.55	32.7	April	72	2	20.3	1,210
July	.0	.0	.0	.0	May	52	1	11.3	695
August	.0	.0	.0	.0	June	3	0	.4	24
September	.0	.0	.0	.0	The year	2,870	0	29.6	21,400
1912-13.					1914-15.				
November	.....	.....	.2	12	January	1,660	0	102	6,270
December	.....	.....	.2	12	February	2,380	183	450	25,000
January	.....	.....	.2	12	March	520	48	153	9,410
February	72	.2	5.58	310	April	710	27	139	8,270
March	64	12	22.6	1,390	May	1,250	70	322	19,800
April	30	.4	5.37	320	June	65	6	29.5	1,760
May	.4	.05	.13	8	July	5	0	.88	54
June	.....	.....	.05	3	August	20	0	.86	53
July	.....	.....	0	0	The year	2,380	0	97.4	70,600
August	.....	.....	0	0	1915-16.				
September	.....	.....	0	0	December	45	.1	7.18	441
The year	72	0	2.80	2,070	January 1-16	1,310	22	146	4,630
1913-14.					The period	.....	.....	.....	5,070
December	.1	0	.04	2					
January	1,680	.1	71.4	4,390					

NOTE.—No flow in months for which discharge is not given. See Extremes of discharge, page 140.

SAN DIEGUITO RIVER NEAR BERNARDO, CALIF.

LOCATION.—In SE. ¼ NW. ¼ sec. 18, T. 13 S., R. 2 W., at Carroll dam site—the reservoir now known as Lake Hodges (Pl. VII, *B*, p. 44)—5½ miles below Bernardo Bridge, about 10½ miles above mouth of river, and 4 miles southwest of Bernardo, San Diego County.

DRAINAGE AREA.—299 square miles (measured on topographic maps).

ELEVATION.—About 200 feet above sea level.

RECORDS AVAILABLE.—January 17, 1916, to September 30, 1918.

GAGE.—Vertical staff in four sections on right bank at dam site. Zero of gage 214 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading near gage.

CHANNEL AND CONTROL.—Shifting sand with bedrock outcropping about 400 feet below gage; fairly permanent except during low stages.

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EXTREMES OF DISCHARGE.—1916–1918. Maximum stage recorded, 21.2 feet 1 to 3 p. m. January 27, 1916 (discharge, 72,100 second-feet); no flow July 30 to September 30, 1916, and June 30 to September 30, 1917.

DIVERSIONS.—East and West San Pasqual ditches divert water for irrigation in San Pasqual Valley. In addition there are several pumping plants along the river above the station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent, except for short periods. Fairly well-defined rating curves were used February 1 to March 19, March 25 to May 18, and October 3 to December 1, 1916; January 3–18, and May 9 to June 29, 1917. Gage read to hundredths twice daily; more frequently during high water. Daily discharge ascertained by applying mean daily gage height to rating tables, by shifting-control method, or read directly from rating curves covering short periods. Records good.

COOPERATION.—Daily-discharge record for 1918 furnished by San Dieguito Mutual Water Co. through Ed. Fletcher, president.

Discharge measurements of San Dieguito River at Carroll dam site, near Bernardo, Calif., for 1916–1918.

Date.	Made by—	Gage height	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Feb. 20	E. A. Bartl	2.67	335	Mar. 5	E. A. Bartl	1.67	100
23	Ebert and Bartl	2.60	326	10	Bartl and Hayes	1.60	107
Mar. 2	E. A. Bartl	3.28	467	10	Ebert and Bartl	1.78	178
8	do	2.60	254	11	do	1.64	112
11	McGlashan and Ebert	2.43	224	17	E. A. Bartl	1.28	64
14	E. A. Bartl	2.33	213	30	do	1.00	42
18	do	2.18	173	Apr. 8	do	.68	15
21	do	2.83	360	10	do	.91	54
25	do	2.49	234	12	do	.83	32
31	do	2.08	161	16	do	.99	72
Apr. 5	do	2.05	159	17	do	2.37	349
10	do	1.80	123	18	do	1.73	126
19	do	1.70	98	20	do	1.43	65
24	do	1.55	84	23	do	1.20	59
30	do	1.43	77	29	do	1.16	61
May 5	do	1.35	63	May 17	E. W. Case	.59	6.3
12	do	1.22	45	21	Case and Grem	.91	37
20	do	1.31	75	28	Hayes and Case	.94	49
June 23	do	.77	16	Nov. 9	F. E. Green		0
30	do	.62	2.4	17	D. A. McClung		.1
July 8	do	.58	2.0	Dec. 25	do		.2
14	Bartl and Ebert	.68	11	1918.			
15	E. A. Bartl	.80	25	Jan. 25	F. E. Green		5.7
19	do	.73	11	25	do		6.7
23	do	.65	5.9	26	do		46
29	do	.46	.5	27	do	.54	34
Oct. 2	do	.58	17	31	do	.01	13
3	W. J. Isbell	.96	75	Feb. 4	do	−.12	8.3
13	E. A. Bartl	.64	27	7	do	−.09	11
21	do	.57	19	11	do	−.34	3.5
28	do	.42	11	14	do	−.24	7.0
Nov. 4	do	.40	7.5	18	do	.62	74
9	do	.40	6.8	21	do	.05	24
19	do	.46	13	23	do	.57	74
25	do	.48	14	25	do	.42	34
Dec. 3	do	.54	29	Mar. 1	do	.08	15
16	do	.48	19	4	do	.06	12
27	do	1.70	119	7	do	.37	39
31	do	1.08	38	8	do		279
1917.				9	do	1.31	72
Jan. 7	E. A. Bartl	1.14	39	11	do		4,500
15	do	1.33	80	12	do		3,150
18	do	1.46	108	13	do		1,380
19	do	2.6	602	13	do		720
21	do	2.45	309	14	do	1.70	325
22	do	2.06	191	15	do	1.30	168
27	do	1.46	78	19	do	.30	101
Feb. 1	do	1.30	60	21	do	.88	175
4	do	1.17	41	25	do	.30	96
10	do	1.09	42	29	do	.08	68
18	do	1.96	235	Apr. 2	do	7.80	57
21	F. C. Ebert	1.78	124	8	do	7.76	45
22	do	1.84	159	12	do	7.72	30
23	Ebert and Bartl	4.41	1,400	17	do		28
23	do	4.17	1,210	20	do		6.9
24	E. A. Bartl	2.80	340	26	do		5.0
25	do	2.64	290	May 16	do		1.0
Mar. 1	do	2.02	142	June 22	D. A. McClung		2.0

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Daily discharge, in second-feet, of San Dieguito River near Bernardo, Calif., for 1916–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1916.										
1	.....	.....	.....	22	718	537	158	66	40	1.0
2	.....	.....	.....	22	672	471	158	64	38	1.0
3	.....	.....	.....	27	649	407	150	62	34	.5
4	.....	.....	.....	22	626	407	158	61	37	.5
5	.....	.....	.....	22	581	428	158	59	38	.5
6	.....	.....	.....	32	537	359	150	57	35	2.5
7	.....	.....	.....	32	493	316	138	58	30	1.0
8	.....	.....	.....	32	449	254	126	58	29	2.0
9	.....	.....	.....	32	449	244	124	56	27	1.5
10	.....	.....	.....	45	449	235	120	52	26	1.0
11	.....	.....	.....	257	428	226	123	51	24	2.5
12	.....	.....	.....	100	428	217	141	49	23	2.5
13	.....	.....	.....	82	407	208	141	48	24	5
14	.....	.....	.....	74	407	199	116	49	21	11
15	.....	.....	.....	230	396	190	116	49	19	25
16	.....	.....	.....	1,310	386	182	113	44	18	21
17	.....	.....	.....	11,800	365	182	109	42	15	16
18	.....	.....	.....	27,000	355	174	103	41	12	13
19	.....	.....	.....	14,800	345	174	105	50	11	11
20	.....	.....	.....	5,220	345	210	96	75	9	5
21	.....	.....	.....	1,730	335	360	89	68	8	1.0
22	.....	.....	.....	909	335	275	85	67	13	2.5
23	.....	.....	.....	662	325	310	84	60	16	6
24	.....	.....	.....	708	315	300	84	55	15	6
25	.....	.....	.....	1,060	305	235	80	54	12	4.0
26	.....	.....	.....	2,950	345	217	79	52	10	1.0
27	.....	.....	.....	37,200	335	199	75	49	9	1.0
28	.....	.....	.....	15,100	365	190	73	48	7	.5
29	.....	.....	.....	4,750	396	182	69	45	4.0	.5
30	.....	.....	.....	2,200	.....	174	68	44	2.5	.0
31	.....	.....	.....	1,220	.....	166	.....	42	.....	.0
1916–17.										
1	6.5	11	13	30	56	130	33	40	38	.....
2	17	10	26	30	50	120	30	31	29	.....
3	89	9	29	139	47	110	27	25	26	.....
4	48	7.5	36	218	43	105	24	21	21	.....
5	19	10	33	92	42	100	22	23	21	.....
6	52	12	32	57	42	86	20	17	22	.....
7	45	13	28	41	42	66	17	15	20	.....
8	38	10	24	35	41	66	14	14	19	.....
9	32	7	23	31	41	66	14	35	18	.....
10	31	8	22	26	40	150	53	42	15	.....
11	30	7	21	23	40	125	53	36	14	.....
12	28	8	2	100	39	108	33	31	10	.....
13	27	13	22	189	38	88	24	30	8	.....
14	27	12	2	87	37	83	25	21	4.3	.....
15	27	11	17	70	35	80	25	14	2.8	.....
16	26	10	18	152	31	76	260	6	2.0	.....
17	24	11	20	97	90	68	315	4.2	1.4	.....
18	23	14	18	114	232	66	123	11	1.2	.....
19	21	13	20	555	197	64	82	46	.6	.....
20	21	13	20	535	170	62	64	36	.7	.....
21	21	14	20	325	140	59	47	34	.6	.....
22	20	13	19	180	160	57	52	26	.6	.....
23	19	11	19	120	1,240	55	58	22	.5	.....
24	20	13	22	95	360	52	55	31	.5	.....
25	17	13	310	85	285	50	48	90	.5	.....
26	13	15	380	80	260	48	44	79	.4	.....
27	12	12	120	76	225	45	41	61	.4	.....
28	11	11	65	72	175	43	60	50	.3	.....
29	12	12	45	68	.....	41	61	43	.2	.....
30	11	14	40	64	.....	39	52	42	.0	.....
31	11	.....	38	60	.....	36	.....	40	.....	.....

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Daily discharge, in second-feet, of San Dieguito River near Bernardo, Calif., 1916–1918—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1917–18.							1917–18.						
1	.....	11	16	56	5	2	16	.....	3	140	28	1	.....
2	.....	10	15	56	5	1	17	.....	3	110	28	1	.....
3	.....	9	14	56	4	1	18	.....	84	90	20	1	.....
4	.....	8	13	56	4	1	19	.....	58	101	15	1	.....
5	.....	9	11	51	4	.8	20	.....	29	200	7	1	.....
							21	.....	17	175	7	1	.....
6	.....	9	20	48	3	.5	22	.....	69	140	6	1	.....
7	.....	10	40	45	3	.3	23	.....	68	120	6	1	.....
8	.....	8	270	45	3	.2	24	.....	30	104	6	.8	.....
9	.....	4	72	38	3	.1	25	7	34	97	5	.7	.....
10	.....	3	62	36	3	.....							
							26	47	28	90	5	.6	.....
11	.....	3	4,000	33	2	.....	27	21	15	80	5	.5	.....
12	.....	4	3,300	30	2	.....	28	15	10	70	5	.4	.....
13	.....	5	1,300	30	2	.....	29	13	.....	50	5	25	.....
14	.....	8	325	29	2	.....	30	12	.....	50	5	20	.....
15	.....	4	165	29	1	.....	31	12	.....	50	.....	5	.....

NOTE.—Discharge Jan. 1–16, 1916, is record at Bernardo station; Jan. 17–31 computed by W. S. Post. No flow July 30 to Sept. 30, 1916. No discharge measurements obtained during June, 1917.

Monthly discharge of San Dieguito River near Bernardo, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1916.				
January	37,200	22	4,180	257,000
February	718	305	432	24,800
March	537	166	265	16,300
April	158	68	113	6,720
May	75	41	54.0	3,320
June	40	2.5	20.2	1,200
July	25	.0	4.71	290
The period	.....	.....	.....	310,000
1916–17.				
October	89	6.5	25.8	1,590
November	15	7	11.2	666
December	380	13	49.7	3,060
January	555	23	124	7,620
February	1,240	31	150	8,330
March	150	36	75.6	4,650
April	315	14	59.2	3,520
May	90	4.2	32.8	2,020
June	38	.0	9.27	552
The year	1,240	.0	44.2	32,000
1917–18.				
November	.....	.....	a.10	6.9
December	.....	.....	a.15	9.2
January	47	.....	4.25	261
February	84	3	19.8	1,100
March	4,000	11	364	22,400
April	56	5	26.4	1,570
May	25	.4	3.45	212
June	2	.0	.23	13.7
The year	4,000	.0	35.3	25,600

a Estimated.

NOTE.—See note to daily-discharge table.

SAN DIEGUITO RIVER NEAR DEL MAR, CALIF.

LOCATION.—In San Dieguito grant at Santa Fe ranch pumping plant, about 4 miles above mouth, and 4½ miles northeast of Del Mar, San Diego County.

DRAINAGE AREA.—328 square miles (measured on topographic maps).

ELEVATION.—About sea level.

RECORDS AVAILABLE.—October 1, 1912, to September 30, 1914.

GAGE.—Vertical staff on right bank about 300 feet from pump house.

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DISCHARGE MEASUREMENTS.—Made from bridge 2 miles below gage or by wading near gage.

CHANNEL AND CONTROL.—Sand; very shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 6.0 feet February 21, 1914 (discharge not determined). No flow for several months each year.

DIVERSIONS.—See San Dieguito River at Bernardo (p. 140). In addition Santa Fe ditch, having a capacity of about 10 second-feet, diverts water 300 feet above gage. The record at this station shows quantity of water wasted into Pacific Ocean.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables or for periods not covered by rating curves, by shifting-control method. Records fair.

Discharge measurements of San Dieguito River near Del Mar, Calif., for 1913–14.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Feb. 26	W. S. Post	2.20	26	Jan. 30	W. S. Post	2.42	[a] 78
Mar. 3	do	2.10	11	Feb. 8	do	2.00	22
14	F. C. Ebert	2.19	19	Mar. 8	F. C. Ebert	2.61	45
29	E. W. Case	2.08	13	27	do	2.45	17

[a] Made from bridge 3 miles below gage.

Daily discharge, in second-feet, of San Dieguito River near Del Mar, Calif., for 1913–14.

Day.	Feb.	Mar.	Apr.	Day.	Feb.	Mar.	Apr.	Day.	Feb.	Mar.	Apr.
1913.				1913.				1913.			
1		14	11	11		5		21		11	
2		9	14	12		5		22		11	
3		8	14	13		11		23		20	
4		8	14	14		16		24		31	
5		5	11	15		16		25		31	
6		5	8	16		11		26	21	34	
7		2	3	17		11		27	20	34	
8		2		18		11		28	30	23	
9		5		19		11		29		14	
10		5		20		11		30		11	
								31		11	

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1914.						1914.					
1		46	96	50	50	16		2	13	0	
2		46	96	42	50	17		2	13	0	3
3		33	76	34	50	18		7	13	0	10
4		33	76	34	26	19			6	0	2
5		22	58	26	26	20			10	0	
6		18	58	26	26	21			4	0	
7		14	58	26	13	22			6	0	
8		22	42	26	13	23			6	58	
9		33	26	20	6	24			13	42	
10		22	26	13	1	25			20	26	
11		14	26	13		26			20	13	
12		18	26	10		27		116	20	13	
13		14	20	13		28		106	42	13	
14		9	20	6		29	130		67	6	
15		2	20	4		30	75		96	26	
						31	60		58		

NOTE.—Daily discharge determined as follows: Feb. 26 to Mar. 2, 1913, by shifting-control method; Mar. 3 to Apr. 5, 1913, from fairly well defined rating curves; Jan. 29 to Feb. 18, 1914, and Feb. 27 to May 19, 1914, from fairly well defined rating curves. Stream dry Oct. 1, 1912, to Feb. 25, 1913; Apr. 8, 1913, to Jan. 26, 1914; Apr. 16–22, May 11–16, and May 20 to Sept. 30, 1914.

Discharge for high water Jan. 27–28, and Feb. 19–26, 1914, not computed as period was not covered by discharge measurements.

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Monthly discharge of San Dieguito River near Del Mar, Calif., for 1912–1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912–13.					1913–14.				
February	30	0	2.5	139	March	96	4	36.5	2,240
March	34	2	13.0	799	April	58	0	18.0	1,070
April	14	0	2.5	149	May	50	0	8.9	547

NOTE.—No flow October, 1912, January, 1913, and May, 1913. to February, 1914, and June to October, 1914, all inclusive.

BLACK CANYON CREEK NEAR MESA GRANDE, CALIF.

LOCATION.—In NE. ¼ sec. 17, T. 12 S., R. 2 E., 1 mile above junction with Santa Ysabel Creek and about 4 miles southwest of Mesa Grande, San Diego County.

DRAINAGE AREA.—15.2 square miles (measured on topographic maps).

ELEVATION.—About 1,950 feet above sea level.

RECORDS AVAILABLE.—February 14, 1913, to September 30, 1918. (Discharge measurements only except for the years 1913–14, January to March, 1917, and 1917–18.)

GAGE.—Inclined staff on left bank.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Solid rock and boulders; fairly permanent.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve for 1917 is well defined below 25 second-feet. Gage read to hundredths (occasionally). Daily discharge for 1913–14 interpolated between discharge measurements and estimated from records of flow at adjacent stations in Santa Ysabel drainage basin; discharge for 1917 ascertained by applying gage height to rating table. Records fair.

Discharge measurements of Black Canyon Creek near Mesa Grande, Calif., for 1913–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
Feb. 14	E. W. Case	1.00	0.7	Oct. 1	R. W. Day	0.15	(a)
15	do	.99	.6	8	do	.15	(a)
16	do	1.01	.8	15	do	.15	(a)
21	R. W. Day	.55	2.9	22	do	.15	(a)
28	do	.98	11	29	do	.18	(a)
Mar. 6	do	.64	3.5	Nov. 5	do	.18	(a)
14	do	.72	4.5	12	do	.21	(a)
18	F. C. Ebert	.60	3	18	do	.18	(a)
28	R. W. Day	.69	4.8	26	do	.24	0.1
Apr. 3	do	.65	4.1	Dec. 3	do	.26	.1
10	do	.54	2.4	10	do	.24	.1
17	do	.54	2.2	17	do	.26	.1
23	do	.53	2.4	24	do	.27	.1
30	do	.47	1.6	1914.			
May 7	do	.43	1.4	Jan. 3	R. W. Day	.37	.3
19	do	.37	.8	7	do	.33	.2
29	do	.43	1.2	14	do	.33	.2
June 6	do	.34	.6	21	do	.55	1.5
11	do	.37	.6	28	do	1.40	36
17	F. C. Ebert	.28	.2	Feb. 4	do	.80	5.4
25	R. W. Day	.22	.1	12	do	.68	2.8
July 2	do	.21	(a)	20	do	1.58	54
10	do	.13	(a)	Mar. 5	F. C. Ebert	.93	10
17	do	.12	(a)	11	R. W. Day	.83	6.7
24	do	.15	(a)	18	do	.75	4.8
29	do	.15	.0	25	do	.75	4.6
Aug. 8	do	.15	.0	Apr. 1	do	.80	6.3
14	do	.13	.0	8	do	.75	4.5
20	do	.12	.0				

a Practically dry.

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Discharge measurements of Black Canyon Creek near Mesa Grande, Calif., for 1913–1918—Continued.

Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*
Apr. 15	R. W. Day	0.66	3.1
26	do	.71	2.8
29	do	.81	5.6
May 6	do	.71	3.6
13	do	.63	2.2
1915.			
Jan. 18	D. A. McClung	.37	.6
25	do	.80	4.8
Feb. 22	R. W. Day	1.30	24
Mar. 1	do	1.72	46
8	do	1.25	25
22	do	.95	8.9
29	do	1.00	11
Apr. 5	do	.85	6.6
12	do	.80	4.8
19	do	.79	4.1
May 11	W. J. Isbell	1.44	33
25	do	1.15	15
June 1	do	.99	11
29	do	.70	2.9
July 13	do	.56	1.4
20	do	.50	.9
27	do	.45	.6
Aug. 3	do	.40	.6
10	do	.25	.1
17	do	.29	.2
24	do	.27	.1
31	do	.28	.2
Sept. 8	do	.30	.1
14	do	.33	.4
21	do	.29	.4
28	do	.29	.3
Oct. 5	do	.22	.1
12	do	.28	.3
26	do	.27	.2
Nov. 2	do	.24	.1
16	do	.35	.6
30	do	.36	.5
Dec. 6	F. C. Ebert		1.2
21	W. J. Isbell	.45	.8
1916.		*Feet.*	*Sec.-ft.*
Jan. 11	W. J. Isbell	1.07	11
Mar. 7	R. W. Day	1.75	27
17	do	1.55	17
29	do	1.60	18
Apr. 5	W. J. Isbell	1.67	16
12	do	1.60	15
25	do	1.44	12
May 2	do	1.25	10
9	do	1.24	7.0
16	do	1.28	7.9
23	do	1.27	7.3
30	do	1.20	5.6
June 6	do	1.25	5.6
13	do	1.16	4.9
20	do	1.10	4.1
July 11	do	1.05	2.9
Aug. 10	do	.97	1.4
Oct. 19	do	.96	1.2
1917.			
Feb. 13	D. A. McClung	1.07	3.9
18	F. C. Ebert	1.40	10
Mar. 7	D. A. McClung	1.30	8.4
9	E. A. Bartl		11
20	D. A. McClung		7.1
27	F. C. Ebert		4.7
13	McClung and Holley		4.9
19	McGlashan and Ebert		9.7
June 29	D. A. McClung		1.2
Aug. 20	McClung and Campbell	.69	.05
Nov. 19	D. A. McClung	.70	.15
Dec. 24	do	.74	.37
31	F. C. Ebert		.6
1918.			
Mar. 8	do		14
31	D. A. McClung	1.20	4.8
May 6	F. C. Ebert	.96	1.6
Aug. 13	D. A. McClung	.62	.05

Daily discharge, in second-feet, of Black Canyon Creek near Mesa Grande, Calif., 1913–14 and 1917–18.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1913–14.							
1		0.1	0.3	8	14	6.3	6.0
2		.1	.3	7	13	6.0	5.0
3		.1	.3	5.5	12	5.8	4.5
4		.1	.3	5.4	11	5.5	4.0
5		.1	.2	5	10	5.3	3.8
6		.1	.2	5	9	5.0	3.6
7		.1	.2	4	8.5	4.7	3.4
8		.1	.2	5	8	4.5	3.2
9		.1	.2	4	7.5	4.3	3.0
10		.1	.2	3	7	4.1	2.8
11		.1	.2	3	6.7	3.9	2.6
12		.1	.2	2.8	6.5	3.7	2.4
13	2.5	.1	.2	2.8	6.2	3.5	2.2
14	1.5	.1	.2	2.5	5.8	3.3	2.1
15	.5	.1	1.5	2.5	5.5	3.1	2.1
16	.1	.1	1.5	2.5	5.3	3.1	2.0
17	0	.1	1.5	2.5	5.0	3.1	1.9
18	0	.1	2	2.5	4.8	3.0	1.9
19	2.5	.1	2	125	4.8	3.0	1.8
20	2.5	.1	1.5	54	4.8	3.0	1.7
21	1.5	.1	1.5	250	4.7	2.9	1.7
22	.5	.5	1.5	100	4.7	2.9	1.6
23	.1	.3	1.5	75	4.6	2.9	1.5
24	.1	.1	2.5	50	4.6	2.8	1.5
25	.1	.1	5	40	4.6	2.8	1.4
26	.1	.1	40	30	4.6	2.8	1.3
27	.1	.1	175	25	5.0	3.0	1.3
28	.1	.2	36	15	5.0	3.0	1.2
29	.1	.2	20		8	5.6	1.1
30	.1	.2	15		10	6.0	1.1
31		.2	10		7		1.0

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Daily discharge, in second-feet, of Black Canyon Creek near Mesa Grande, Calif.; 1912–14 and 1917–18.—Continued.

Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.
1917.				1917.				1917.			
1				11		4.0		21			
2			16	12		3.9		22		152	
3				13		4.0		23	10	77	7
4				14				24			
5				15				25			
6		4.0		16	13		9	26		18	
7	3.5	3.8	8.5	17				27			4.7
8		3.8		18		10		28			
9		3.0	11	19		13		29			
10		3.0		20		32	7	30	6		8
								31			

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.											
1		0.2		0.8	1.6	6					
2									0.2		
3							2.8				
4			0.2					2.2			
5	0.5				1.6	4.2			.2	0.0	
6				.5							0.1
7	.8				4.2		2.8	1.6			
8		.2			28				6		
9						4.2	2.8			.1	
10	.2								.2		
11			.3		517			1.1			
12				.5	540	2.8			.2		
13			6		42					.1	
14			1.1				2.8	.6			.1
15				.6							
16		.3			9	3.5			.2	.2	
17	.2						2.2				
18				6	8			.6			
19						2.8			.1		
20				1.1	30		2.8			.1	.1
21			.5					.4			
22		.3			12						
23						3.2			.1	.1	
24	.2						2.2				
25			4.2	4.2				.3			
26					8	3.5			.1		
27			2.8				2.2			.1	.1
28		.2						.2			
29					7		7		.2		
30			.6			3.2					
31							2.2			.1	

NOTE.—Daily discharge Nov. 13, 1913, to May 31, 1914, obtained by interpolation between measurements and by comparison with records of flow at other stations in the Santa Ysabel basin. Stream dry, Oct. 1 to Nov. 12, 1913, and practically dry during August and September, 1914. For discharge for June and July, 1914, see monthly discharge table.

Monthly discharge of Black Canyon Creek near Mesa Grande, Calif., for 1913–14.

Month.	Mean discharge in second-feet.	Run-off (total in acre-feet).	Month.	Mean discharge in second-feet.	Run-off (total in acre-feet).
October	0.0	0	May	2.41	148
November	.41	24	June	1.0	60
December	.13	8	July	.15	9
January	10.4	640	August	0	0
February	29.9	1,660	September	0	0
March	7.04	433			
April	3.96	236	The year	4.44	3,220

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TEMESCAL CREEK NEAR ALMOND, CALIF.

LOCATION.—In NW. ¼ sec. 23, T. 12 S., R. 1 E., about 400 feet above junction with Santa Ysabel Creek and 1½ miles south of Almond, San Diego County.

DRAINAGE AREA.—31.5 square miles (measured on topographic maps).

ELEVATION.—About 975 feet above sea level.

RECORDS AVAILABLE.—February 15, 1913, to November 30, 1915. (Discharge measurements only for year 1912-13.)

GAGE.—Inclined staff on right bank.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Sand; shifting.

EXTREMES OF DISCHARGE.—1913-1915: Record too incomplete to show maximum stage during period; maximum mean daily discharge for period estimated 300 second-feet, February 21, 1914; no flow for several months each year.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage discharge relation not permanent. Gage read to hundredths about twice a week. Daily discharge interpolated between discharge measurements or estimated from record of flow at station on Santa Ysabel Creek near Ramona. Records fair.

Discharge measurements of Temescal Creek near Almond, Calif., for 1913-1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Feb. 15	W. S. Post	.....	0.8	Jan. 8	R. W. Day	0.58	0.3
22	R. W. Day	0.67	3.7	16	do	.64	.6
25	do	.59	2.1	22	do	.57	.4
Mar. 7	do	.63	1.0	27	do	2.41	235
11	do	.62	1.0	29	do	1.75	12
18	F. C. Ebert	.60	.9	Feb. 1	do	1.47	2.7
21	R. W. Day	.60	1.0	5	do	1.47	1.6
25	do	.60	.8	10	do	1.42	1.0
Apr. 1	do	.60	.8	17	do	1.44	.9
9	do	.60	.6	24	do	2.10	25
16	do	.61	.6	Mar. 3	do	1.90	7.5
22	do	.62	.6	4	F. C. Ebert	1.95	7.8
29	do	.60	.4	11	R. W. Day	1.74	5
May 6	do	.60	.4	19	do	1.70	3.4
11	F. C. Ebert	.61	.4	26	do	1.57	2.7
17	R. W. Day	.57	.2	31	do	1.54	6.3
23	do	.53	.2	Apr. 6	do	1.54	3.6
27	do	.55	.4	13	do	1.45	2.8
June 4	do	52	.2	27	do	1.35	3.0
12	do	.48	.2	May 1	do	1.27	4.5
16	F. C. Ebert	.44	.2	4	do	1.26	3.2
26	R. W. Day	.48	.2	7	do	1.20	2.1
July 2	do	.43	.1	11	do	1.18	1.6
8	do	.47	.1	Aug. 26	W. J. Isbell	.95	.01
14	do	.44	.1				
22	do	.50	.1	1915.			
29	do	.54	.1	Jan. 10	D. A. McClung	1.09	.6
Aug. 5	do	.50	.0	17	do	1.07	.6
13	do	.48	.0	24	do	1.05	.9
22	do	.52	(b)	Feb. 6	do	1.82	8.6
28	F. C. Ebert	.51	a .05	13	do	2.48	36
Sept. 2	R. W. Day	.47	.02	20	R. W. Day	2.01	20
9	do	.44	.0	27	do	1.90	16
20	do	.50	.1	Mar. 6	do	1.57	23
25	do	.50	a .02	12	do	1.39	14
Oct. 2	do	.51	.1	20	do	1.25	12
9	do	.52	.1	Apr. 2	do	.94	6.9
19	do	.47	(b)	17	do	.71	4.5
23	do	.51	.05	17	do	.71	4.4
28	do	.48	(b)	June 1	W. J. Isbell	.68	8.8
Nov. 6	do	.49	.1	July 13	do	—.14	1.5
12	do	.73	2.5	Aug. 10	do	—.37	.1
23	do	.51	.1	24	do	—.31	.8
Dec. 2	do	.51	.1	Sept. 28	do	—.36	.4
11	do	.53	.1	Oct. 12	do	—.34	.5
18	do	.53	.3	26	do	—.36	.3
23	do	.73	.6	Nov. 9	do	—.24	1.5
				30	do	—.29	.7

a Estimated. b Nearly dry.

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Daily discharge, in second-feet, of Temescal Creek near Almond, Calif., for 1913–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.1	0.05	0.1	0.2	2.7	9	6.0	4.5	.....	.....	.....	.....
2	.1	.1	.1	.2	2.0	8	6.0	4.0	.....	.....	.....	.....
3	.1	.1	.1	.2	1.6	7.5	5.4	3.5	.....	.....	.....	.....
4	.1	.1	.1	.2	1.6	7.8	4.8	3.2	.....	.....	.....	.....
5	.1	.1	.1	.2	1.6	7.4	4.2	2.8	.....	.....	.....	.....
6	.1	.1	.1	.2	1.6	7.0	3.6	2.4	.....	.....	.....	.....
7	.1	.1	.1	.2	1.0	6.5	3.5	2.1	.....	.....	.....	.....
8	.1	.1	.1	.3	1.6	6.1	3.4	2.0	.....	.....	.....	.....
9	.1	.05	.1	.3	1.0	5.7	3.3	1.8	.....	.....	.....	.....
10	.1	.05	.1	.3	1.0	5.4	3.2	1.7	.....	.....	.....	.....
11	.1	.05	.1	.3	1.0	5.0	3.1	1.6	.....	.....	.....	.....
12	.1	1.0	.2	.3	1.0	4.8	3.0	1.6	.....	.....	.....	.....
13	.1	2.5	.1	.3	1.0	4.6	2.8	1.5	.....	.....	.....	.....
14	.1	1.5	.2	.3	.9	4.4	2.8	1.5	.....	.....	.....	.....
15	.1	.5	.3	.6	.9	4.2	2.8	1.4	.....	.....	.....	.....
16	.1	.1	.3	.6	.9	4.0	2.8	1.4	.....	.....	.....	.....
17	.1	.1	.3	.6	.9	3.8	2.8	1.3	.....	.....	.....	.....
18	.05	.1	.3	.8	.9	3.6	2.8	1.3	.....	.....	.....	.....
19	.05	2.5	.3	.9	150	3.4	2.8	1.2	.....	.....	.....	.....
20	.05	2.5	.3	.6	50	3.3	2.9	1.2	.....	.....	.....	.....
21	.05	1.5	.3	.4	300	3.2	2.9	1.1	.....	.....	.....	.....
22	.05	.5	1.0	.4	150	3.1	2.9	1.1	.....	.....	.....	.....
23	.05	.1	.6	.4	75	3.0	2.9	1.0	.....	.....	.....	.....
24	.05	.1	.4	1.0	25	2.9	3.0	1.0	.....	.....	.....	.....
25	.05	.1	.2	2.5	20	2.8	3.0	.9	.....	.....	.....	.....
26	.05	.1	.2	50	15	2.7	3.0	.9	.....	.....	.....	.....
27	.05	.1	.2	235	10	3.0	3.0	.8	.....	.....	.....	.....
28	.05	.1	.2	20	10	3.0	3.0	.8	.....	.....	.....	.....
29	.05	.1	.2	12	.....	6.0	3.0	.7	.....	.....	.....	.....
30	.05	.1	.2	6.0	.....	9.0	4.5	.7	.....	.....	.....	.....
31	.05	.....	.2	4.0	.....	6.3	.....	.7	.....	.....	.....	.....
1914–15.												
1	.1	.1	.4	.5	8	30	7	52	9	3.5	0.8	0.3
2	.1	.1	.5	.5	20	40	7	65	10	3.5	.8	.3
3	.1	.1	.5	.5	15	24	7	57	10	3	.7	.3
4	.1	.1	.5	.5	12	24	7	40	9	3	.7	.3
5	.1	.1	.5	.6	10	23	7	33	9	3	.6	.3
6	.1	.1	.5	.6	8.5	23	8	30	8	3	.5	.3
7	.1	.1	.5	.6	7.5	20	7	27	8	2.5	.4	.3
8	.1	.1	.5	.6	7	18	6	25	8	2.5	.3	.3
9	.1	2.0	.5	.6	7	16	6	24	7	2.5	.2	.3
10	.1	1.0	.5	.6	75	18	5	23	6	2	.1	.3
11	.1	.7	.5	.6	125	15	5	22	6	2	.1	.3
12	.1	.4	.5	.6	50	14	5	22	6	2	.1	.3
13	.1	.1	.5	.6	36	13	5	22	5	1.5	.1	.3
14	.1	.2	.5	.6	25	12	5	21	5	1.5	.1	.3
15	.2	.4	.5	.6	18	12	5	21	5	1.5	.1	.3
16	.2	.6	.5	.6	18	11	5	20	5	1.5	.1	.4
17	.2	.8	.8	.6	19	11	4.5	20	4	1	.1	.4
18	.1	1.0	1.0	.6	14	11	4	19	4	1	.1	.4
19	.1	.8	1.0	.6	12	12	4	18	4	1	.1	.4
20	.1	.7	1.0	.6	20	12	4	18	4	1	.1	.4
21	.1	.6	1.0	.7	20	12	10	18	4	1	.1	.4
22	.1	.5	1.0	2.5	15	12	15	18	4	1	.1	.4
23	.1	.4	1.0	1.5	14	11	10	17	4	1	.1	.4
24	.1	.3	1.0	.9	16	11	10	17	4	.9	.8	.4
25	.1	.2	1.0	2.0	25	11	8	16	3.5	.8	.8	.4
26	.1	.2	1.0	1.5	17	12	7	15	3.5	.8	15	.4
27	.1	.2	1.0	1.5	16	12	7	14	3.5	.8	1	.4
28	.1	.3	.9	2.0	13	11	7	13	3.5	.8	.5	.4
29	.1	.3	.8	75	.....	10	12	12	3.5	.8	.5	.4
30	.1	.4	.7	40	.....	9	40	11	3.5	.8	.4	.4
31	.1	.....	.6	12	.....	8	.....	11	.....	.8	.4	.....

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Monthly discharge of Temescal Creek near Almond, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet.)	Month.	Discharge in second-feet			Run-off (total in acre feet.)
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913–14.					1914–15.				
October			0.077	5	October	0.2	0.1	0.11	7
November			.483	29	November	2.0	.1	.43	26
December			.23	14	December	1.0	.4	.70	43
January			10.9	670	January	75	.5	4.88	300
February			29.6	1,640	February	125	7	23.0	1,290
March			5.05	311	March	40	8	15.4	947
April			3.44	205	April	40	4	7.98	475
May			1.67	103	May	65	11	23.9	1,470
June			a.70	42	June	10	3.5	5.63	335
July			a.10	6	July	3.5	.8	1.68	103
					August	15	.1	.83	51
The year			4.18	3,020	September	.4	.3	.35	21
					The year	125	.1	6.98	5,060

a Estimated.

NOTE.—Stream dry during August and September, 1914.

EAST SAN PASQUAL DITCH NEAR ESCONDIDO, CALIF.

LOCATION.—In NE. ¼ sec. 36, T. 12 S., R. 1 W., a short distance below intake, at upper end of San Pasqual Valley, 9 miles southeast of Escondido, San Diego County.

RECORDS AVAILABLE.—1912 to 1914.

GAGE.—Stage was determined by measuring distance to water surface from reference point at top of flume.

DISCHARGE MEASUREMENTS.—Made from foot plank across flume at gage.

CHANNEL.—Considerable silt from the Santa Ysabel is deposited in the ditch.

ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths once daily. Daily discharge for year 1912–13 was computed from rating curves covering short periods, by shifting-control method, and by interpolation between discharge measurements. Records fair.

The intake of East San Pasqual ditch is on left bank of Santa Ysabel Creek near mouth of canyon. August 15 to January 15, it is entitled to entire flow of Santa Ysabel Creek. During remainder of year it has a right to divert 16 second-feet for 10 consecutive days out of each 30. The water is used for irrigation in San Pasqual Valley.

Discharge measurements of East San Pasqual ditch near Escondido, Calif., in 1912–1914.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
May 2	F. C. Ebert	1.09	12.1	Nov. 10	R. W. Day		0.0
June 8	W. S. Post	.54	3.5	21	do	0.81	3.0
22	E. W. Case	.27	2.9	Dec. 5	do		.0
1913.				15	do		.0
Jan. 20	F. C. Ebert	.70	9.3	26	do		.0
24	do	.53	6.0	1914.			
Feb. 14	do	.60	6.4	Jan. 5	do		.0
Mar. 13	do	.64	4.0	12	do		.0
19	do	.63	3.6	19	do		.0
Apr. 10	do	1.33	11	30	do		.0
May 5	R. W. Day	1.15	5.5	Feb. 27	do		.0
12	F. C. Ebert	.82	4.8	Mar. 6	do	1.13	10
20	R. W. Day	.33	3.8	13	do	1.45	16
June 2	do	.35	3.7	27	do		.0
12	do	.65	2.3	Apr. 3	do		.0
16	F. C. Ebert		.0	10	do	1.24	11
23	R. W. Day		.0	17	do	1.25	14
July 1	do		.0	24	do	1.18	12
Oct. 27	do		.0	May 8	do	1.26	12
Nov 3	do		.0	June 12	C. E. Hickok	.35	3.0

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Daily gage height, in feet, of East San Pasqual ditch near Escondido, Calif., for 1912–1914.

Day.	June.	July.	Day.	June.	July.	Day.	June.	July.
1912.			**1912.**			**1912.**		
1		0.25	11	0.46		21	0.25	
2		.21	12	.46		22	.25	
3		.29	13	.42		23	.31	
4		.21	14	.57		24	.29	
5		.23	15	.60		25	.25	
6		.16	16	.58		26	.26	
7		.12	17	.46		27	.25	
8			18	.31		28	.17	
9	0.54		19	.25		29	.29	
10	.50		20	.27		30	.26	
						31		

NOTE.—In 1912 water was turned in on Mar. 3 and continued to flow until May 14. After this date the discharge of the Santa Ysabel was so low that it became necessary to apportion the water according to the terms of the water right. Ditch dry after July 7. No estimate of daily discharge.

Daily discharge, in second-feet, of East San Pasqual ditch near Escondido, Calif., for 1912–13.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1912-13.							
1	0	0	5.5	0	0	0	4.6
2	0	0	4.9	0	0	0	3.7
3	0	0	5.2	1.8	0	0	3.6
4	0	0	5.5	8.3	0	0	3.4
5	0	0	10	8.6	0	5.5	3.3
6	0	0	14	8.8	0	5.4	3.1
7	0	0	14	8.8	10	5.3	3.0
8	0	0	15	8.8	13	5.2	2.9
9	0		11	6.6	12	5.1	2.7
10	0		7.1	4.5	11	5.0	2.6
11	0		6.6	4.0	10	4.9	2.4
12	0		6.0	3.4	10	4.8	2.3
13	0		6.0	4.0	9.4	4.7	1.5
14	0		6.0	4.0	8.8	4.6	.5
15	0		5.8	4.0	8.3	4.5	0
16	0		5.5	3.4	10	4.3	0
17	0	0	5.5	3.2	9.4	4.1	0
18	0	0	5.5	2.9	4.7	4.0	0
19	0	0	6.3	3.4	0	3.9	0
20	0	9.3	7.1	6.1	0	3.8	0
21		8.9	9.3	6.9	0	2.8	0
22		8.0	20	7.7	0	2.5	0
23		7.1	12	3.8	0	2.2	0
24		6.0	4.5	0	0	2.8	0
25		6.6	0	0	0	3.3	0
26		4.9	0	0	0	3.3	0
27		4.9	0	0	0	3.3	0
28		5.2	0	0	0	6.0	0
29		5.5		0	0	8.8	0
30		5.5		0	0	7.2	0
31		5.5		0		5.5	

NOTE.—October and November, 1912 and July, August, and September, 1913, ditch dry. No record December 21-31, 1912 and January 9-16, 1913.

Monthly discharge of East San Pasqual ditch near Escondido, Calif., for 1912–13.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
January	9.3	0	5.16	154	May	8.8	0	3.96	243
February	20	0	7.08	393	June	4.6	0	1.65	98
March	8.8	0	3.65	224					
April	13	0	3.89	231	The period				1,343

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GUEJITO CREEK NEAR ESCONDIDO, CALIF.

LOCATION.—In northwest corner sec. 25, T. 12 S., R. 1 W., at highway bridge on road through San Pasqual Valley from Escondido to Ramona, one-fourth mile above junction with Santa Ysabel Creek, and 7 miles southeast of Escondido, San Diego County.

DRAINAGE AREA.—27.6 square miles (measured on topographic maps).

ELEVATION.—About 425 feet above sea level.

RECORDS AVAILABLE.—February 8 to September 30, 1915, and October 1, 1916, to September 30, 1917.

GAGE.—Vertical staff fastened to right wing wall of bridge on down-stream face, installed December 24, 1916. Gage previously used was a vertical staff on right bank 15 feet above bridge; datum 1.0 foot higher than that of present gage.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Sand; very shifting. At high stages water overflows the highway at several points as channel at bridge is inadequate. There is backwater from Santa Ysabel Creek at flood stages.

EXTREMES OF DISCHARGE.—1915 and 1917: Maximum discharge recorded, February 10, 1915 (mean daily discharge estimated, 118 second-feet); no flow for several months each year.

DIVERSIONS.—A small ditch diverts water for irrigation above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths once daily. Daily discharge computed by shifting-control method or read from poorly defined rating curves covering short periods. Records fair.

COOPERATION.—Gage-height record for 1915 and some discharge measurements furnished by C. H. Lee, consulting engineer, Los Angeles.

Discharge measurements of Guejito Creek near Escondido, Calif., for 1915–1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1915.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Feb. 1	K. B. Sleppy	.....	3.5	Jan. 22	D. A. McClung	.87	7.8
7	....do	1.79	5.1	23	E. A. Bartl	.81	6.7
10	F. C. Ebert	2.52	90	Feb. 12	D. A. McClung	.80	2.4
25	D. L. Lee	2.68	42	13	F. C. Ebert	.82	2.9
Mar. 3	F. C. Ebert	2.86	23	19	E. A. Bartl	.85	11
11	D. L. Lee	2.8	13	26	D. A. McClung	.90	11
27	F. C. Ebert	2.53	1.0	Mar. 9	Ebert and Bartl	.80	4.0
May 4	D. L. Lee	2.88	28	10	....do	.80	7.3
17	F. C. Ebert	2.77	9.2	20	D. A. McClung	.80	3.6
1916.				28	F. C. Ebert	.75	1.8
Oct. 17	W. J. Isbell	.14	1.3	Apr. 12	McClung and Holly	.72	2.6
Dec. 21	F. C. Ebert	.07	1.5	18	E. A. Bartl	.81	5.2
1917.				May 21	F. C. Ebert	.76	1.7
Jan. 17	....do	.85	3.2	June 8	D. A. McClung	.77	.7
				29	....do	.....	.0

Daily discharge, in second-feet, of Guejito Creek near Escondido, Calif., for 1915–1917.

Day.	Feb.	Mar.	Apr.	May.	June.	Day.	Feb.	Mar.	Apr.	May.	June.
1915.						1915.					
1	.....	24	1	34	5	16	62	11	.5	8	2.5
2	.....	35	1	34	5	17	57	10	.5	7	2.5
3	.....	23	1	34	5	18	54	10	.5	10	1
4	.....	19	1	29	5	19	45	10	.5	7	1
5	.....	18	1	56	5	20	42	9	.5	7	1
6	.....	22	1	40	5	21	34	9	.5	7	1
7	.....	13	1	32	5	22	36	8	29	7	1
8	5	16	.5	25	2.5	23	29	8	29	5	1
9	5	15	.5	23	2.5	24	40	5	24	5	1
10	118	18	.5	22	2.5	25	43	4.5	20	5	.5
11	92	13	.5	21	2.5	26	26	2.5	20	5	.5
12	71	17	.5	15	2.5	27	28	1	12	5	.5
13	81	12	.5	14	2.5	28	28	1	12	5	.5
14	69	12	.5	13	2.5	29	.....	1	16	5	.5
15	72	11	.5	9	2.5	30	.....	1	24	5	.5
						31	.....	1	.....	5	.....

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Daily discharge, in second-feet, of Guejito Creek near Escondido, Calif., for 1915–1917—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1916–17.							
1	1	1.5	3.5	6	1.5	5	2
2	1.5	1.5	3.5	5	1	4	1.5
3	1.5	5	3.5	4	1	3	1.5
4	1	3	3	4	1	3	1
5	1	2	3	3.5	.5	3	1
6	1	2	3	3	.5	2	1
7	1	1.5	3	3	.5	1.5	.8
8	1	1.5	3	3	1	1.5	.7
9	1	1.5	3	4	4	3	.6
10	1	1.5	2.5	7.5	3	3	.5
11	1	1.5	2.5	6.5	3	4	.4
12	1	2	2.5	6	2.5	2	.3
13	1	2.5	3	5	2	1	.2
14	1	2	3	5	2.5	1	.2
15	1	3.5	2	5	3	1	.1
16	1	4	1.5	4	10	1	.1
17	1	3	8	3.5	7	1	.0
18	1	6	15	3.5	5	3	.0
19	1	27	11	3.5	3	2.5	.0
20	1	20	10	3.5	2.5	1.5	.0
21	1.5	15	11	3.5	2	1.5	.0
22	2	8	40	3	1.5	1.5	.0
23	1.5	7	23	2.5	1.5	1.5	.0
24	5	5	14	2	1	2	.0
25	12	4	13	2	1	4	.0
26	5	4	11	2	1.5	3	.0
27	4	4	8	2	7	2	.0
28	2	4	7	2	8	1.5	.0
29	1.5	3.5	.....	2	7	1.5	.0
30	1.5	3.5	.....	1.5	6	2	.0
31	1.5	3.5	.....	1.5	.....	2	.....

Monthly discharge of Guejito Creek near Escondido, Calif., for 1915–1917.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1915.					1916–17.				
February 8–28	118	5	49.4	2,060	October	.....	.....	a 1.5	92
March	35	1	11.6	713	November	.....	.....	a 1.5	89
April	29	.5	6.67	397	December	12	1	1.89	116
May	56	5	16.1	990	January	27	1.5	4.97	306
June	5	.5	2.33	139	February	40	1.5	7.73	429
					March	7.5	1.5	3.63	223
The period	118	0	10.8	4,300	April	10	5	3.03	180
					May	5	.1	2.31	142
					June	2	.0	.40	24
					The year	40	.0	2.21	1,600

a Estimated.

NOTE.—Stream dry during July, August, and September, 1917.

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WEST SAN PASQUAL DITCH NEAR ESCONDIDO, CALIF.

LOCATION.—In sec. 34, T. 12 S., R. 1 W., 800 feet below intake on Santa Ysabel Creek, at upper end of San Pasqual Valley, 7 miles southeast of Escondido, San Diego County.

RECORDS AVAILABLE.—1912 to September 30, 1915.

GAGE.—Vertical staff fastened to side of old culvert about 800 feet below head gate.

DISCHARGE MEASUREMENTS.—Made from foot plank across ditch near gage.

CHANNEL AND CONTROL.—Considerable silt from the Santa Ysabel is deposited in the ditch and causes changes in the stage-discharge relation.

EXTREMES OF DISCHARGE.—1912–1915: Maximum mean daily discharge, 16 second-feet, February 24, 1914; no flow for several months each year.

ACCURACY.—Stage-discharge relation not permanent. There are not sufficient discharge measurements to accurately determine changes in channel, and gage-height record is considered only fair. Daily discharge computed from rating curves covering short periods and by shifting-control method. Records fair.

The intake of West San Pasqual ditch is below that of East San Pasqual and on opposite side of Santa Ysabel Creek. From January 16 to August 14, if there is not sufficient water in the stream for both ditches, West San Pasqual may take 16 second-feet for 20 consecutive days out of each 30. This water is used for irrigation in San Pasqual Valley.

Discharge measurements of West San Pasqual ditch near Escondido, Calif., for 1912–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1912.				1914.			
May 2	F. C. Ebert	2.42	11.1	Mar. 6	R. W. Day	2.19	7.1
15	E. W. Case	2.40	7.0	13	do	2.18	7.2
23	F. C. Ebert	2.40	9.0	27	do	2.33	8.2
June 23	E. W. Case	1.95	.9	Apr. 3	do	2.12	5.9
				10	do	2.00	4.6
1913.				17	do	1.86	3.7
Jan. 18	W. D. McFadden	(a)	3.2	24	do		[b] .0
20	F. C. Ebert	1.44	.6	May 8	do		[b] .0
24	do	1.90	4.4	June 12	do		[b] .0
Mar. 13	do	2.06	5.7				
19	do	2.05	6.7	1915.			
20	do	2.15	7.0	Jan. 25	F. C. Ebert	1.93	5.3
Apr. 21	R. W. Day	2.32	8.9	Feb. 7	K. B. Sleppy	2.01	6.5
29	do	1.94	4.7	Mar. 3	F. C. Ebert		[b] .0
				27	do	2.29	7.2
1914.				Apr. 10	R. W. Day	2.11	5.8
Jan. 19	R. W. Day	2.56	9.0	July 7	F. C. Ebert	2.27	5.5
30	do	1.85	3.2	Aug. 2	do		.0
Feb. 27	do	1.95	5.3				

[a] Old gage read 2.17 feet. [b] Stream dry.

Daily gage height, in feet, of West San Pasqual ditch near Escondido, Calif., for 1912–1915.

Day.	May.	June.	Day.	May.	June.	Day.	May.	June.
1912.								
1		2.4	11			21		
2			12			22	2.4	
2			13			23	2.4	1.95
4			14	2.3	2.1	24	2.6	
5			15	2.4	2.2	25	2.6	
6	2.6		16	2.5	2.2	26	2.6	
7	2.5		17		2.2	27	2.55	
8			18	2.5	2.1	28	2.55	
9			19		2.1	29	2.35	
10			20		2.0	30	2.45	
						31	2.4	

NOTE.—For the season of 1912 water was turned into this ditch on Mar. 5 and continued to flow until May 8. Flow apportioned according to the water right after May 14. No water in ditch May 8–14, 17, 19–21, and June 4–13. Gage not read June 2, 3, 21, and 22. Daily discharge not computed.

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Daily discharge, in second-feet, of West San Pasqual ditch near Escondido, Calif., for 1913–1915.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1913.							1913.						
1	0.0	2.5	7.5	0.0	5	0.5	16	0.0	3	6	0.0	1.5	0.0
2	.0	1.5	6	.0	.0	.0	17	.0	3	6.5	8	.5	.0
3	.0	.5	4	4.5	.0	.0	18	3	3	6.5	9.5	.5	.0
4	.0	.0	5	5.5	.0	.0	19	2	3	5.5	10	.5	.0
5	.0	.0	4.5	2.5	.0	.0	20	.5	3.5	6.5	10	1.5	.0
6	.0	.0	4.5	3	.0	.0	21	1.5	5	8.5	9	1	.0
7	.0	.0	5	3	.0	.0	22	2.5	3	4.5	8.5	.5	.0
8	.0	.0	3	2.5	.0	.0	23	3	3	3	8.5	.0	.0
9	.0	.0	4	.0	.0	.0	24	4	3.5	1	8.5	.0	.0
10	.0	.0	5	.0	.0	.0	25	3.5	3.5	4	7.5	.0	.0
11	.0	.0	4	.0	.0	.0	26	3	6.5	5	6.5	.0	.0
12	.0	.0	2.5	.0	.0	.0	27	3	6	5.5	6	.0	.0
13	.0	.0	5.5	.0	.0	.0	28	3	7.5	6.5	5	.0	.0
14	.0	.0	4	.0	.0	.0	29	.0	.....	6	5	.0	.0
15	.0	.0	6	.0	.0	.0	30	.0	.....	6	5	.0	.0
							31	2.5	.....	6.5	.....	1	.....

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1913-14.								
1	0.0	0.0	0.0	7	9.5	0.0	0.0	6.5
2	.0	.0	.0	7.5	9	.0	.0	7.5
3	.0	.0	.0	7	9	6	.0	7.5
4	.0	.0	.0	11	8	4.5	7.5	8
5	.0	.0	.0	.0	8	.0	4	.0
6	.0	.0	.0	.0	7	.0	.0	.0
7	.0	.0	.0	.0	6	4	.0	.0
8	.0	.0	.0	.0	7.	4.5	.0	5
9	.0	.0	.0	.0	.0	3	2.5	.0
10	.0	.0	.0	.0	4	4.5	.0	.0
11	.0	.0	.0	.0	6	4	6.5	.0
12	.0	.0	.0	6	5	3.5	5	.0
13	8	.0	.0	9	7	5	5	.0
14	.0	.0	.0	1.5	7	4	10	.0
15	.0	.0	.0	7.5	7	4.5	11	.0
16	.0	.0	.0	9.	.0	3	.0	.0
17	.0	.0	.0	12	7	3.5	7.5	.0
18	.0	.0	9	11	8.5	9.5	8	.0
19	1	.0	9	13	6.5	7.5	7.5	.0
20	.0	.0	.8	.0	6	10	8	.0
21	.0	.0	.0	.0	9.5	12	6.5	.0
22	.0	.0	.0	12	9	10	4	.0
23	.0	10.	.0	14	7	.0	6.5	.0
24	.0	8.5	.1	16	8	.0	.0	.0
25	.0	.0	10	.0	8	.0	.0	.0
26	.0	.0	10	.0	7	.0	.0	.0
27	.0	.0	13	5.5	8	10	6.5	.0
28	.0	.0	2	.0	2	12	9.5	.0
29	.0	.0	2	.....	3.5	.1	.0	.0
30	.0	.0	3	.....	4	.0	.0	.0
31	.....	.0	8	.....	2.5	.....	.0	.....

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Daily discharge, in second-feet, of West San Pasqual ditch near Escondido, Calif., for 1913–1915—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1914–15.							
1		0	0	10	0	3.5	5
2		0	0	9	0	2	3.5
3		0	0	5.5	0	3.5	3.5
4		0	0	5.5	0	3.5	3.5
5		7.5	0	5	0	3.5	3.5
6		7	0	9	0	3.5	3
7		6.5	0	5.5	0	3.5	5
8		7	0	6.5	0	3.5	3.5
9		6.5	0	5.5	0	3.5	7
10		6.5	0	5.5	0	3	5
11		0	0	5.5	0	3.5	6
12		0	0	5.5	0	3.5	6
13		0	0	5.5	0	3.5	5
14		0	0	4.5	0	3.5	7
15		0	0	4.5	0	3.5	8
16		0	0	6.5	0	3.5	8
17		6.5	0	4.5	0	5	5
18		9	0	4.5	5	5	6
19		6.5	0	4.5	3.5	6	6
20		6.5	0	5.5	6	5	7
21		0	0	0	3.5	5	6
22		0	0	0	3.5	3.5	8
23		0	0	5.5	0	3.5	8
24		0	0	0	0	3.5	8
25	6.5	0	5.5	0	0	3.5	8
26	6.5	0	5	0	0	6	8
27	6.5	0	6	0	5	3.5	8
28	6.5	0	7	0	3.5	3.5	8
29	0	.....	7	0	6	3.5	6
30	0	.....	5	0	6	3.5	7
31	0	.....	5	.....	6	.....	0

NOTE.—Daily discharge for year 1912–13, determined from fairly well-defined rating curve; that for 1913–14 and 1914–15 from rating curves covering short periods and by shifting-control method. Ditch dry when no discharge is given.

Monthly discharge of West San Pasqual ditch near Escondido, Calif., for 1912–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912–13.					**1913–14.**				
January	4	0.0	1.02	63	May	11	0.0	3.73	229
February	7.5	.0	2.07	115	June	8	.0	1.15	68
March	8.5	1	5.10	314	The year	16	.0	196	1,420
April	10	.0	4.27	254	**1914–15.**				
May	5	.0	.39	24	January	6.5	0	.84	52
June	.5	.0	.02	1	February	9	0	2.48	138
The year	10	.0	1.06	771	March	7	0	1.31	81
1913–14.					April	10	0	4.12	245
November	8	.0	.30	18	May	6	0	1.55	95
December	10	.0	.60	37	June	6	2	3.80	226
January	13	.0	2.16	133	July	8	0	5.85	360
February	16	.0	5.32	295	The year	10	0	1.65	1,200
March	9.5	.0	6.32	389					
April	12	.0	4.17	248					

NOTE.—Ditch dry in months for which discharge is not given.

SANTA MARIA CREEK NEAR RAMONA, CALIF.

LOCATION.—In SE. ¼ sec. 11, T. 13 S., R. 1 W., about 7 miles below mouth of Hatfield Creek and 5½ miles west of Ramona, San Diego County.

DRAINAGE AREA.—57.3 square miles (measured on topographic maps).

ELEVATION.—About 1,300 feet above sea level.

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RECORDS AVAILABLE.—November 6, 1912, to September 30, 1918.

GAGE.—Friez water-stage recorder on left bank just above control; installed during summer 1916. Before this time water-stage recorder was on right bank at same datum. (See Pl. X, *A*, p. 61.)

DISCHARGE MEASUREMENTS.—Made from cable 370 feet below gage or by wading. Before flood of January, 1916, cable was 100 feet below gage.

CHANNEL AND CONTROL.—Bed above and below station composed of shifting sand. Left bank is high; right bank may be overflowed during extreme high water. About 1,000 feet below gage valley narrows to a rocky gorge at proposed dam site. This narrowing results in natural storage in channel during extreme high water. Concrete control just below gage at an outcropping of solid rock was rebuilt during summer 1916. Zero flow about stage 1.7 feet.

EXTREMES OF DISCHARGE.—1912–1918: Maximum stage recorded, 15.9 feet January 27, 1916 (discharge, 7,140 second-feet); no flow for several months each year.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curves well defined. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph, or, for days of considerable fluctuation, by averaging the hourly discharge. Records good.

Discharge measurements of Santa Maria Creek near Ramona, Calif., for 1913–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1913.				1916.			
Apr. 17	H. D. McGlashan	1.35	[a] 0.05	Jan. 4	W. J. Isbell	1.37	0.1
June 16	F. C. Ebert	1.35	[a] .05	11	do	1.80	2.4
Dec. 6	R. W. Day	1.35	[a] .05	24	W. D. McFadden	2.70	75
20	do	1.35	[a] .05	Feb. 3	Day and McFadden	3.45	144
28	do	1.36	[a] .07	6	Day and Case	3.18	95
				11	R. W. Day	2.78	70
1914.				15	do	2.60	49
Jan. 3	do	1.35	[a] .05	28	do	2.64	68
10	do	1.35	[a] .05	Mar. 3	do	2.55	52
22	F. C. Ebert	1.35	[a] .05	14	F. C. Ebert	2.33	22
29	R. W. Day	1.63	2.1	18	R. W. Day	2.27	18
31	do	1.45	.6	24	do	2.37	24
Feb. 21	do	4.20	558	Apr. 5	W. J. Isbell	2.23	14
22	do	2.41	[b] 42	12	do	2.26	16
28	do	1.92	5.6	19	do	2.11	9.1
Mar. 4	F. C. Ebert	1.70	1.7	25	do	2.03	5.8
7	R. W. Day	1.51	.4	May 2	do	1.94	3.2
14	do	1.39	[a] .15	9	do	1.90	4.6
21	do	1.37	[a] .10	16	do	1.73	3.0
Apr. 11	do	1.36	[a] .08	23	do	1.74	2.3
25	do	1.35	[a] .1	30	do	1.74	3.3
May 2	do	1.38	[a] .15	June 6	do	1.60	1.8
9	do	1.35	[a] .1	13	do	1.50	.7
16	do	1.35	.1	Aug. 12	F. C. Ebert	1.33	.05
				Oct. 17	W. J. Isbell	1.70	.05
1915.				Dec. 1	Isbell and McClung	1.71	.02
Jan. 31	D. A. McClung	2.46	36	26	McClung and Case	2.28	14
Feb. 5	do	2.25	17	29	do	2.09	4.0
16	R. W. Day	2.43	31				
23	do	2.32	21	1917.			
Mar. 2	do	2.91	113	Jan. 18	F. C. Ebert	2.25	13
8	F. C. Ebert	2.32	25	19	do	2.77	76
9	R. W. Day	2.26	19	Feb. 12	McClung and Castinien	2.09	3.9
16	do	2.12	12	16	F. C. Ebert	2.06	2.6
23	do	1.99	7.0	17	do	2.45	32
30	do	2.02	8.7	Mar. 10	do	2.23	10
Apr. 6	do	1.86	2.5	20	D. A. McClung	2.09	5.2
13	do	1.53	.5	28	F. C. Ebert	2.01	2.0
20	do	1.63	1.3	Apr. 12	McClung and Holly	1.94	1.4
May 6	do	2.59	47	19	McGlashan and Ebert	2.12	6.0
11	W. J. Isbell	2.25	18	June 7	D. A. McClung	1.71	.05
June 1	do	1.85	3.6	28	do	1.69	[c] .0
9	do	1.60	1.1	1918.			
Nov. 9	do	1.37	.02	Mar. 8	F. C. Ebert	2.09	4.7

[a] Estimated. [b] Made at highway bridge at Ramona. [c] Stream dry.

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Daily discharge, in second-feet, of Santa Maria Creek near Ramona, Calif., for 1912–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1912–13.										
1			0.05	0.05	0.05	0.2	0.05			
2			.05	.05	.05	.2	.05		0.05	
3			.05	.05	.05	.2	.05	0.05		
4			.05	.05	.05	.2	.05			
5			.05	.05	.05	.2	.05			
6		0.2	.05	.05	.05	.2	.05			
7		.05	.05	.05	.05	.05	.05		.05	
8		.05	.05	.05	.05	.05	.05			
9		.05	.05	.05	.05	.05	.05			
10		.05	.05	.05	.05	.05	.05			
11		05	.05	.05	.05	.05	.05			
12		.05	.05	.05	.05	.05	.05			
13		.05	.05	.05	.05	.05	.05			
14		.05	.05	.05	.05	.05	.05			
15		.05	.05	.05	.05	.05	.05			
16		.05	.05	.05	.05	.05	.05		.05	
17		.05	.05	.05	.05	.05	.05	.05		
18		.05	.05	.05	.05	.05	.05			
19		.05	.05	.05	.05	.05	.05			
20		.05	.05	.05	.05	.05	.05			
21		.05	.05	.05	.05	.05	.05			
22		.05	.05	.05	.4	.05	.05	.05		
23		.05	.05	.05	.4	.05	.05			
24		.05	.05	.05	.4	.2	.05			
25		.05	.05	.05	.8	.4	.05			
26		.05	.05	.05	.05	.4	.05			
27		.05	.05	.05	.05	.2	.05			
28		.05	.05	.05	.2	.2	.05		.05	
29		.05	.05	.05		.05	.05			
30		.05	.05	.05		.05	.05			
31			.05	.05		.05				
1913–14.										
1			.05	.05	.3	4.7	.4	.2	.05	
2			.05	.05	.2	3.8	.3	.2	.05	
3			.05	.05	.2	2.3	.2	.2		
4		.05	.05	.05	.2	1.8	.1	.1		
5		.05	.05	.05	.2	1.5	.1	.1		
6		.05	.05	.05	.2	1.0	.1	.2		
7	.05	.05	.05	.05	.2	.9	.1	.1		
8		.05	.05	.05	.2	.3	.1	.1		
9		.05	.05	.05	.2	.3	.1	.05		
10		.05	.05	.05	.2	.3	.2	.05		
11		.05	.05	.05	.1	.3	.1	.05		
12		.05	.05	.05	.1	.3	.1	.05		
13		.05	.05	.05	.1	.2	.1	.05		
14		.05	.05	.05	.1	.2	.1	.05		
15		.05	.05	.05	.1	.2	.1	.05		
16		.05	.05	.05	.1	.2	.1	.05		
17		.05	.05	.05	.1	.2	.1	.05		
18		.05	.05	.1	.7	.2	.05	.05		
19		.05	.05	.1	71	.1	.05	.05		
20		.05	.05	.1	90	.1	.05	.05		
21		.05	.05	.1	439	.1	.05	.05		
22		.05	.4	.1	35	.1	.05	.05		
23		.05	.5	.1	21	.1	.4	.05		
24		.05	.2	.1	15	.1	.2	.05		
25		.05	.05	.1	10	.1	.05	.05		
26		.05	.05	5.2	7.6	.2	.05	.05		
27		.05	.05	274	6.9	.2	.1	.05		
28		.05	.05	18	5.9	.2	.1	.05		
29		.05	.05	1.7		.2	.1	.05		
30		.05	.05	.4		1.0	.2	.05		
31			.05	.4		.6		.05		

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Daily discharge, in second-feet, of Santa Maria Creek near Ramona, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1914–15.										
1			0.1	0.1	35	124	6.4	192	4.3	0.2
2			.1	.1	420	150	4.3	163	4.3	.2
3		0.1	.1	.1	124	41	3.4	71	5.2	.2
4		.1	.2	.1	29	35	3.4	29	4.3	.2
5		.1	.2	.1	18	29	3.4	112	3.4	.2
6		.1	.2	.1	15	29	4.3	63	3.4	.2
7		.1	.2	.1	13	25	4.3	41	2	.2
8		.1	.1	.1	9.2	21	2.7	25	1.5	.2
9		.1	.2	.1	11	18	2.7	18	1	.1
10		.1	.2	.1	382	48	2	18	.8	.1
11		.1	.4	.1	450	63	2	18	.8	.1
12		.1	.1	.1	110	18	2	15	.5	.1
13		.1	.1	.1	60	15	.8	13	.4	.1
14		.1	.1	.1	40	13	2	11	.2	.1
15		.1	.1	.1	30	15	4.3	11	.2	.1
16		.1	.2	.1	35	11	6.4	11	.2	.1
17		.1	.1	.1	41	11	2.7	11	.2	.1
18		.1	.1	.1	25	9.2	2	18	.2	.1
19		.1	.1	.1	29	9.2	2	15	.2	.....
20		.1	.1	.1	1.01	9.2	1.5	13	.2	.....
21		.1	.1	.1	63	9.2	18	11	.2	.....
22		.1	.1	.2	35	5.2	41	11	.2	.....
23		.1	.1	.1	29	6.4	15	11	.2	.....
24		.1	.1	.1	48	9.2	25	11	.2	.....
25		.1	.1	.1	136	5.2	11	9.2	.1	.....
26		.1	.1	.1	35	5.2	9.2	9.2	.1	.....
27		.1	.1	.1	29	6.4	4.3	6.4	.2	.....
28		.1	.1	1.6	29	7.6	13	6.4	.2	.....
29		.1	.1	860	.....	9.2	19	6.4	.2	.....
30		.1	.1	458	.....	7.6	101	5.2	.2	.....
31		.....	.1	41	.....	6.4	.....	5.2	.....	.....
1915–16.										
1				.2	135	115	16	3.6	3.6	.....
2				.2	11	95	16	3.6	3.6	.....
3				.2	11	52	16	3.7	3.1	.....
4				.....	11	48	16	3.9	2.6	.....
5				.....	95	55	16	4.0	2.1	.....
6				.....	95	48	16	4.2	1.7	.....
7				.....	9	41	16	4.3	1.5	.....
8				.2	85	41	16	4.5	1.4	.....
9				.2	75	34	16	4.6	1.2	.....
10				.4	70	28	16	4.4	1.1	.....
11				2.4	70	24	16	4.1	1.0	.2
12				1.5	65	24	16	3.9	.9	.2
13			.2	1.0	60	24	16	3.7	.8	.2
14			.2	2.5	105	24	13	3.4	.5	.2
15			.2	4.0	55	24	13	3.2	.2	.2
16			.2	1,200	41	19	11	3.0	.2	.2
17			.2	2,820	29	19	11	2.9	.2	.2
18			.2	1,960	90	16	8.5	2.8	.2	.2
19				914	71	16	8.5	2.7	.2	.....
20				283	41	19	8.5	2.6	.2	.....
21				163	90	34	8.5	2.5	.2	.....
22				113	71	28	8.5	2.4	.2	.....
23				78	112	24	6.5	2.3	.5	.....
24				71	90	41	6.5	2.5	.5	.....
25				275	112	28	6.5	2.7	.5	.....
26				1,970	112	34	4.8	2.9	.5	.....
27				4,960	130	24	4.8	3.0	.2	.....
28				1,370	68	29	4.8	3.2	.2	.....
29				223	100	19	4.8	3.4	.2	.....
30			.2	322	.....	16	3.6	3.6	.2	.....
31			.5	150	.....	16	.....	3.6	.....	.....

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Daily discharge, in second-feet, of Santa Maria Creek near Ramona, Calif., for 1912–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1916–17.										
1		0.1	0.1	4.3	6.5	12	1.1	1.4	0.9	
2		.1	.1	4.3	4.8	10	.8	1.1	.2	
3		.1	.1	4.3	4.4	8.5	.7	.9	.1	
4		.1	.1	4.4	3.4	8	.4	.9	.1	
5		.1	.1	4.4	3.6	7.5	.3	.8	.1	
6		.1	.1	4.4	3.6	7	.2	.3	.1	
7		.1	.1	8.9	3.4	5.5	.1	.2	.1	
8		.1	.1	3.2	3.2	5.5	.2	.2		
9		.1	.1	2.6	3.4	6.5	.8	.7		
10		.1	.1	1.6	3.4	11	1.5	1.4		
11		.1	.1	1.6	2.9	8.5	1.3	1.1		
12		.1	.1	3.4	3.4	7.5	1.0	.5		
13		.1	.1	22	3.4	5.5	.8	.2		
14		.1	.1	7	3.4	5.5	1.0	.2		
15		.1	.1	7	2.6	5.5	1.6	.2		
16		.1	.1	18	2.2	4.4	16	.1		
17		.1	.1	9.5	18.0	3.6	21	.1		
18		.1	.1	17	42	4.6	6.5	.3		
19		.1	.1	83	31	3.6	3.9	.5		
20		.1	.1	57	18	3.6	2.9	.2		
21		.1	.1	42	13	3.6	2.6	.2		
22	0.1	.1	.1	22	16	3.4	1.9	.2		
23	.1	.1	.1	15	82	2.6	1.5	1.2		
24	.1	.1	1.4	11	26	2.4	1.4	2.3		
25	.1	.1	26	8.5	23	2.4	1.4	.9		
26	.1	.1	12	8.5	20	2.4	1.9	2.4		
27	.1	.1	15	8.5	17	2.2	10	1.2		
28	.1	.1	4.4	8.5	14	1.9	12	.9		
29	.1	.1	4.2	8.5		1.8	11	.9		
30	.1	.1	4.2	8		1.7	1.9	1.4		
31	.1		4.2	8		1.6		1.4		
1917–18.										
1				.05	.1	.1	2.4	.1	.1	
2				.05	.05	.1	2.6	.1		
3				.05	.05	.1	3.2	.1		
4				.05	.05	.1	2.6	.1		
5				.1	.05	.1	1.9	.1		
6				.1	.05	.1	2.4	.1		
7				.1	.05	.4	1.7	.1		
8				.1	.05	8.5	1.2	.1		
9				.1	.05	.2	1.1	.1		
10				.1	.05	.4	1.2	.1		
11				.1	.05	131	1.3	.1		
12				.1	.05	670	1.2	.1		
13				.2	.05	110	1.6	.1		
14				.2	.05	25	1.6	.1		
15				.2	.05	15	1.3	.1		
16				.1	.05	8.5	.8	.1		
17				.1	.1	6	.6	.1		
18				.1	.3	4.8	.3	.1		
19				.1	.1	101	.2	.1		
20				.1	.1	72	.1	.1		
21				.1	.1	21	.1	.1		
22				.1	.3	12	.1	.1		
23				.1	.2	8.5	.1	.1		
24			.05	.1	.1	7.5	.1	.1		
25			.05	.1	.1	7	.1	.1		
26			.05	.2	.1	6	.1	.1		
27			.05	.2	.1	5.5	.1	.1		
28			.05	.2	.1	4.8	.1	.1		
29			.05	.1		3.9	.1	.1		
30			.05	.1		3.4	.1	.1		
31			.05	.1		2.9		.1		

NOTE.—No flow Nov. 6, 1912, to Feb. 22, 1913; Mar. 29 to Dec. 21, 1913; May 9 to Dec. 3, 1914; and July 19 to Sept. 30, 1915 except small quantity of ground water rising to the surface at rock dyke at gage. No gage-height record Jan. 11–15, 1916; Feb. 7–13, 27 to Mar. 3; June 3–5, 7–12, 28 to July 10; and July 19–31; discharge interpolated from discharge measurements or determined by comparison with records at stations on Santa Ysabel Creek. No flow, Oct. 1 to Dec. 12, 1915, July 1 to 10 and July 19 to Sept. 30, 1916. Water-stage recorder not in operation Dec. 30, 1916, to Jan. 5, 1917 and Feb. 25 to Mar. 2—discharge interpolated. Practically dry Oct. 1 to Dec. 23, 1917, and June 2 to Sept. 30, 1918. No gage-height record Mar. 12–15—discharge estimated.

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Monthly discharge of Santa Maria Creek near Ramona, Calif., for 1912–1918.

Month.	Discharge in second-feet.			
	Maximum.	Minimum.	Mean.	Run-off (total in acre-feet).
1912–13.				
November	0.2	0.05	0.06	3
December	.05	.05	.05	3
January	.05	.05	.05	3
February	.8	.05	.12	6.7
March	.4	.05	.12	7.4
April	.05	.05	.05	3
May	.....	.....	.05	3
June	.....	.....	.05	3
The period	.....	.....	.....	32.1
1913–14.				
November	.05	.0	.04	2
December	.5	.05	.08	5
January	274	.05	9.72	596
February	439	.1	25.2	1,400
March	4.7	.1	.70	43
April	.4	.05	.13	7.7
May	.2	.05	.08	5.
June	.05	.0	.01	.6
The year	439	0	2.84	2,060
1914–15.				
November	.1	0	.09	5
December	.4	.1	.13	8
January	860	.1	44	2,700
February	450	9.2	85	4,720
March	150	5.2	24.9	1,530
April	101	.8	10.6	631
May	192	5.2	31	1,910
June	5.2	.1	1.17	70
July	.2	0	.08	5
The year	860	0	15.9	11,600
1915–16.				
December	.5	.0	.06	4
January	4,960	.0	545	33,500
February	135	29	85.7	4,930
March	115	16	33.8	2,080
April	16	3.6	11.4	678
May	4.6	2.3	3.39	208
June	3.6	.2	.98	58
July	.2	.0	.10	6
The year	4,960	.0	57.1	41,500
1916–17.				
October	.1	.1	.10	6.1
November	.1	.1	.10	6.0
December	26	.1	2.38	146
January	83	1.6	13.3	818
February	82	2.2	13.4	744
March	12	1.6	5.12	315
April	21	.1	3.59	214
May	2.9	.1	.78	48
June	.9	.0	.05	3.0
The year	83	.0	3.18	2,300
1917–18.				
December	.....	.....	[a].05	3.1
January	.2	.05	.113	6.9
February	.3	.05	.091	5.1
March	670	.1	39.9	2,450
April	3.2	.1	1.01	60.1
May	.1	.1	.10	6.1
June	.....	.....	[a].05	3.0
The year	670	.00	3.50	2,530

[a] Estimated.

NOTE.—No flow in months for which record is not given; records therefore represent complete years.

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MISCELLANEOUS MEASUREMENTS.

The following miscellaneous measurements have been made in the San Dieguito River basin:

Miscellaneous discharge measurements in San Dieguito River drainage basin.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
July 13, 1914	Santa Ysabel Creek	Santa Ysabel ranch near Santa Ysabel		0.4
Sept. 8, 1914	do	do		.1
Apr. 22, 1916	do	do		19.
May 2, 1912	East San Pasqual ditch.	Sand box, 9 miles from Escondido, NW. ¼ sec. 36, T. 12 S., R. 1 W.		12.1
June 8, 1912	do	do		3.5
June 22, 1912	do	do		2.9
June 12, 1914	do	Head gate	0.35	3.0
Apr. 10, 1915	do	do	4.41	8.0
Nov. 17, 1917	do	20 feet before intake		1.5
Dec. 25, 1917	do	do		3.8
May 2, 1912	West San Pasqual ditch.	NE. ¼ sec. 34, T. 125, R. 1		11.1
May 15, 1912	do	do		7.0
May 23, 1912	do	do		9.0
June 23, 1912	do	do		.9
Mar. 29, 1913	Santa Fe ranch ditch	Pumping plant on Santa Fe ranch, 4½ miles northeast of Del Mar.		6.7

ESCONDIDO CREEK BASIN.

Measurements of the flow of Escondido Creek are listed in the following table:

Miscellaneous measurements in Escondido Creek drainage basin.

Date.	Locality.	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Nov. 14, 1917	San Elijo dam site on Santa Fe ranch near San Marcos		0.02
Jan. 26, 1918	do	2.40	11
Jan. 30, 1918	do	2.00	.08
Feb. 18, 1918	do	2.17	1.2
Feb. 22, 1918	do	2.28	4.8
Feb. 27, 1918	do	2.09	.28
Mar. 8, 1918	do	2.28	3.6
Mar. 13, 1918	do	2.85	107
Mar. 16, 1918	do	1.50	13
Mar. 23, 1918	do	1.54	12
Mar. 28, 1918	do	1.42	4.4
Apr. 6, 1918	do	1.39	2.7
Apr. 11, 1918	do	1.28	1.7
Mar. 18, 1918	do	1.20	1.0

SAN LUIS REY RIVER BASIN.

GENERAL FEATURES.

San Luis Rey River drains an area of about 565 square miles, lying wholly in the northern part of San Diego County and extending from the crest of the Coast Range to the Pacific Ocean, a distance of 65 miles, with a maximum width of about 16 miles.

The river is formed by many small streams, which have their sources in the higher elevations of the Coast Range and come together at the lower or west end of what is known as Warner's

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Valley. Below this point the river flows for 10 miles through a deep, narrow canyon with a heavy grade, then over a sandy and gravelly bed with light grade for some 40 miles, and finally discharges into the Pacific Ocean at Oceanside.

Altitudes within this basin range from 50 to 500 feet in the foothills in the vicinity of Oceanside and from 500 to 6,000 feet on the mountains. Palomar Mountain, the highest peak in the basin, has an elevation of 6,126 feet above sea level. The upper portion of the basin is more or less rolling, and several of the valleys are under cultivation and are used extensively for stock raising; the middle part, occupied by the river in its canyon, is rough; on the lower reaches the surface becomes less rugged, merging into the foothills, which extend to the coast. The geology of the basin is described in the report on the geology and ground waters of the western part of San Diego County, by A. J. Ellis and C. H. Lee, published by the Geological Survey as Water-Supply Paper 446.

The basin is poorly forested. Some fairly good timber is found at the higher elevations, but the greater part of the cover is brush and grass and a scattered growth of oaks.

The mean annual precipitation in this basin probably ranges from 10 to 50 inches, gradually increasing with altitude. It occurs almost entirely as rain, snow appearing only occasionally on the high elevations.

Small areas are irrigated along the river, and water is diverted and used for irrigation and municipal supply at Escondido and vicinity. A reservoir could be constructed at the lower end of Warner's Valley which would store the entire normal flow of the river.

GAGING-STATION RECORDS.

SAN LUIS REY RIVER[1] NEAR WARNER SPRINGS, CALIF.

LOCATION.—In NE. ¼ sec. 17, T. 10 S., R. 3 E., in San Jose del Valle grant, 3½ miles above junction with West Fork of San Luis Rey River, and 4 miles northwest of Warner Springs, San Diego County.

DRAINAGE AREA.—35.8 square miles (measured on topographic maps).

ELEVATION.—About 2,900 feet above sea level.

RECORDS AVAILABLE.—January 25, 1913, to November 18, 1915. (Occasional discharge measurements until June 27, 1916.)

GAGE.—Sanders & Rising water-stage recorder on left bank; staff in two sections on opposite bank.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Sand; shifting. A concrete control was built across channel, just below gage, but it did not prove very effective on account of the accumulation of sand.

EXTREMES OF DISCHARGE.—1913-1915: Maximum stage recorded, about 4.0 feet at crest of flood of January 27, 1914 (discharge, 233 second-feet); minimum stage recorded, 2.2 feet August 23 to 25, 1914 (discharge 0.4 second-foot.)

[1] Local name Puerta la Cruz Creek.

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Diversions.—None.

Regulation.—None.

Accuracy.—Stage-discharge relation not permanent. Mean daily gage heights determined by inspecting recorder graph. Daily discharges computed by interpolation between discharge measurements, from rating curves covering short periods, and by comparison with record of flow at station on San Luis Rey River near Mesa Grande. Discharge for high-water periods, especially when not covered by gage-height records, estimated as 12 per cent of flow at Mesa Grande. Records fair.

Discharge measurements of San Luis Rey River near Warner Springs, Calif., for 1913–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Jan. 25	W. J. Isbell	2.22	1.0	Apr. 1	J. E. Ridder	2.39	1.2
30	do	2.24	1.0	8	W. J. Isbell	2.33	.9
Feb. 4	do	2.23	1.0	15	do	2.27	.8
11	do	2.23	.9	22	do	2.31	1.3
19	F. C. Ebert	2.22	.9	29	do	2.23	1.0
Mar. 2	W. J. Isbell	2.20	1.3	May 6	do	2.20	.8
16	do	2.19	1.1	13	do	2.20	.8
27	do	2.20	.8	20	do	2.20	1.0
Apr. 3	do	2.20	.9	27	do	2.20	.9
10	do	2.17	1.0	June 3	do	2.18	.6
17	do	2.18	.9	18	do	2.18	.6
23	do	2.17	.8	July 9	do	2.17	.7
May 1	do	2.19	.8	Aug. 20	F. C. Ebert	2.18	.6
10	F. C. Ebert	2.19	.7	Sept. 10	W. J. Isbell	2.18	.8
18	W. J. Isbell	2.18	.8	Oct. 20	do	2.18	1.0
23	do	2.18	.7	Nov. 20	do	2.17	.8
31	do	2.18	.7	Dec. 9	do	2.16	1.2
June 6	do	2.17	.7	1915.			
12	do	2.18	.7	Jan. 27	W. J. Isbell	2.17	.8
14	F. C. Ebert	2.18	.6	Feb. 1	do	2.80	33
18	W. J. Isbell	2.18	.8	3	do	3.10	51
25	do	2.19	.6	12	do	3.30	80
July 1	do	2.20	.6	18	do	2.81	15
15	do	2.20	.5	Mar. 4	do	2.80	32
21	do	2.21	.5	11	do	2.72	19
Aug. 19	do	2.21	.5	18	do	2.57	6.0
25	do	2.20	.4	25	do	2.44	3.7
Sept. 2	do		.6	Apr. 8	do	2.32	1.8
10	do		.6	16	do	2.28	1.8
18	do	2.23	.6	23	do	2.58	9.2
22	do	2.18	.6	May 7	do	2.80	35
29	do	2.22	.5	13	R. W. Day	2.66	11
Oct. 6	F. C. Ebert	2.21	.8	20	W. J. Isbell	2.58	7.6
14	W. J. Isbell	2.21	.7	27	do	2.17	3.2
20	do	2.20	.7	June 3	do	2.36	1.3
Nov. 3	do	2.21	.6	10	do	2.32	1.6
10	do	2.21	.7	24	do	2.32	1.4
14	do	2.22	1.0	July 1	do	2.30	1.2
17	do	2.22	1.0	8	do	2.32	1.5
24	do	2.20	.9	15	do	2.31	1.1
Dec. 2	do	2.21	1.0	22	do	2.31	1.2
10	do	2.22	1.0	29	do	2.30	1.1
17	do	2.22	1.0	Aug. 5	do	2.28	1.1
23	do	2.22	1.1	12	do	2.29	1.1
1914.				19	do	2.28	1.0
Jan. 1	W. J Isbell	2.20	0.8	26	do	2.28	1.1
8	do	2.18	.9	Sept. 9	do	2.27	1.0
14	do	2.17	.8	16	do	2.28	1.4
17	do	2.34	3.1	23	do	2.27	1.2
22	do	2.18	.8	30	do	2.28	1.2
30	do	2.22	1.9	Oct. 14	do	2.27	1.1
Feb. 4	do	2.19	.8	28	do	2.29	1.2
11	do	2.17	.7	Nov. 11	do	2.30	1.0
18	do	2.22	1.0	18	do	2.31	1.1
19	do	3.70	181				
22	do	2.90	61	1916.			
28	do	2.78	36	Feb. 11	W. J. Isbell	[a] 1.30	38
25	Jas. Ridder	2.75	13	18	do	[a] 1.35	22
Mar. 4	W. J. Isbell	2.64	1.0	Mar. 9	do	[a] .80	12
11	do	2.62	.8	24	do	[a] .60	13
18	do	2.55	.9	30	do	[a] .42	6.8
25	do	2.63	.9	June 27	do		2.2
30	do	2.48	1.1				

[a] Temporary gage.

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Daily discharge, in second-feet, of San Luis Rey River near Warner Springs, Calif., for 1913–1916.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913.												
1	.....	.....	.....	.....	1.0	1.5	0.9	0.8	0.7	0.6	0.5	0.6
2	.....	.....	.....	.....	1.0	1.3	.9	.8	.7	.6	.5	.6
3	.....	.....	.....	.....	1.0	1.5	.9	.8	.7	.6	.5	.6
4	.....	.....	.....	.....	1.0	1.5	.9	.8	.7	.6	.5	.6
5	.....	.....	.....	.....	1.5	1.5	.9	.8	.7	.6	.5	.6
6	.....	.....	.....	.....	2.0	1.5	.9	.7	.7	.6	.5	.6
7	.....	.....	.....	.....	2.0	1.5	1.0	.7	.7	.6	.5	.6
8	.....	.....	.....	.....	4.0	1.5	1.0	.7	.7	.5	.5	.6
9	.....	.....	.....	.....	2.5	1.5	1.0	.7	.7	.5	.5	.6
10	.....	.....	.....	.....	1.5	1.5	1.0	.7	.7	.5	.5	.6
11	.....	.....	.....	.....	.9	1.5	1.0	.7	.7	.5	.5	.6
12	.....	.....	.....	.....	.9	2.5	1.0	.7	.7	.5	.5	.6
13	.....	.....	.....	.....	.9	2.0	1.0	.7	.6	.5	.5	.6
14	.....	.....	.....	.....	.9	1.5	.9	.7	.6	.6	.5	.6
15	.....	.....	.....	.....	.9	1.1	.9	.8	.6	.5	.5	.6
16	.....	.....	.....	.....	.9	1.1	.9	.8	.7	.5	.5	.6
17	.....	.....	.....	.....	.9	1.1	.9	.8	.7	.5	.5	.6
18	.....	.....	.....	.....	.9	1.1	.9	.8	.8	.5	.5	.6
19	.....	.....	.....	.....	.9	1.1	.9	.8	.8	.5	.5	.6
20	.....	.....	.....	.....	.9	1.1	.9	.8	.8	.5	.5	.6
21	.....	.....	.....	.....	6.0	1.1	.8	.7	.7	.5	.5	.6
22	.....	.....	.....	.....	21	1.5	.8	.7	.7	.5	.5	.6
23	.....	.....	.....	.....	5	2.0	.8	.7	.7	.5	.4	.6
24	.....	.....	.....	.....	7	3.0	.8	.7	.6	.5	.4	.6
25	.....	.....	.....	1.0	25	1.5	.8	.7	.6	.5	.4	.6
26	.....	.....	.....	1.0	10	1.0	.8	.7	.6	.5	10	.5
27	.....	.....	.....	1.0	15	.8	.8	.7	.6	.5	.6	.5
28	.....	.....	.....	1.0	3.0	.8	.8	.7	.6	.5	.6	.5
29	.....	.....	.....	1.0	.....	.8	.8	.7	.6	.5	2.0	.5
30	.....	.....	.....	1.0	.....	.8	.8	.7	.6	.5	.8	.6
31	.....	.....	.....	1.0	.....	.9	.....	.7	.....	.5	.6	.....
1913–14.												
1	0.7	0.6	1.0	.8	1.5	6.0	1.2	1.0	.7	.7	.6	.....
2	.7	.6	1.0	.8	1.5	3.0	1.2	.9	.7	.7	.6	.....
3	.7	.6	1.0	.8	1.0	1.0	1.1	.9	.6	.7	.6	.....
4	.8	.6	1.0	.8	.8	1.0	1.1	.9	.6	.7	.6	.....
5	.8	.6	1.0	.9	.8	1.0	1.0	.9	.6	.7	.6	.....
6	.8	.6	1.0	.9	.8	1.0	1.0	.8	.6	.7	.6	.....
7	.8	.7	1.0	.9	.8	.9	.9	.8	.6	.7	.6	.....
8	.8	.7	1.0	.9	.8	.9	.9	.8	.6	.7	.6	.....
9	.8	.7	1.0	.9	.8	.8	.9	.8	.6	.7	.6	.....
10	.8	.7	1.0	.9	.8	.8	.9	.8	.6	.7	.6	.8
11	.7	.7	1.0	.9	.7	.8	.9	.8	.6	.7	.6	.....
12	.7	.7	1.0	.8	.7	.8	.9	.8	.6	.7	.6	.....
13	.7	.8	1.0	.8	.7	.8	.8	.8	.6	.7	.6	.....
14	.7	1.0	1.0	.8	.7	.8	.8	.8	.6	.7	.6	.....
15	.7	1.0	1.0	1.0	.7	.9	.8	.8	.6	.7	.6	.....
16	.7	1.0	1.0	2.0	.7	.9	.8	.9	.6	.7	.6	.....
17	.7	1.0	1.0	3.1	.7	.9	.9	.9	.6	.7	.6	.....
18	.7	1.0	1.0	4.5	1.0	.9	1.0	1.0	.6	.7	.6	.....
19	.7	1.0	1.0	6.0	98	.9	1.0	1.0	.6	.7	.6	.....
20	.7	1.0	1.0	3.0	183	.9	1.1	1.0	.6	.7	.6	.....
21	.7	.9	1.1	1.5	204	.9	1.2	1.0	.6	.7	.6	.....
22	.7	.9	1.1	.8	113	.9	1.3	1.0	.6	.7	.6	.....
23	.7	.9	1.1	.8	38	.9	1.3	1.0	.6	.7	.6	.....
24	.7	.9	1.1	.8	22	.9	1.2	.9	.6	.7	.6	.....
25	.7	.9	1.1	3.0	13	.9	1.2	.9	.6	.7	.6	.....
26	.7	.9	1.1	105	12	.9	1.1	.9	.6	.7	.6	.....
27	.7	.9	1.0	120	10	1.0	1.1	.9	.6	.7	.6	.....
28	.7	.9	1.0	21	9	1.0	1.0	.9	.6	.7	.6	.....
29	.6	1.0	.9	20	.....	1.1	1.0	.8	.6	.7	.6	.....
30	.6	1.0	.9	1.9	.....	1.2	1.0	.8	.6	.7	.6	.....
31	.6	.....	.8	1.5	.....	1.2	.....	.7	.....	.7	.6	.....

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Daily discharge, in second-feet, of San Luis Rey River near Warner Springs, Calif., for 1913–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	0.7	0.9	1.0	1.2	33	23	3	42	2.0	1.2	1.1	1.1
2	.7	.9	1.1	1.2	126	39	3	38	1.3	1.2	1.1	1.1
3	.7	.9	1.1	1.2	51	46	3	20	1.3	1.3	1.1	1.0
4	.7	.9	1.1	1.2	14	32	2	16	1.3	1.3	1.1	1.0
5	.7	.9	1.1	1.2	8.5	30	2	62	1.4	1.4	1.1	1.0
6	.8	.9	1.2	1.2	3.5	28	1.8	45	1.4	1.4	1.1	1.0
7	.8	.9	1.2	1.2	2.0	26	1.8	40	1.5	1.5	1.1	1.0
8	.8	.9	1.2	1.2	2.0	24	1.8	43	1.5	1.5	1.1	1.0
9	.8	.9	1.2	1.2	3.5	22	1.8	46	1.6	1.5	1.1	1.0
10	.8	.9	1.2	1.2	175	20	1.8	28	1.6	1.4	1.1	1.0
11	.8	.8	1.2	1.2	185	19	1.8	26	1.6	1.3	1.1	1.1
12	.9	.8	1.2	1.2	80	17	1.8	16	1.6	1.3	1.1	1.2
13	.9	.8	1.2	.9	69	15	1.8	11	1.6	1.2	1.1	1.2
14	.9	.8	1.2	.9	54	13	1.8	11	1.5	1.1	1.1	1.3
15	.9	.8	1.2	.9	46	11	1.8	11	1.5	1.1	1.1	1.4
16	.9	.8	1.2	.9	38	9	1.8	14	1.5	1.1	1.0	1.4
17	.9	.8	1.2	.9	32	8	1.8	14	1.5	1.1	1.0	1.4
18	1.0	.8	1.2	.9	15	6	1.8	11	1.5	1.1	1.0	1.3
19	1.0	.8	1.2	.9	15	5.5	1.8	11	1.5	1.2	1.0	1.3
20	1.0	.8	1.2	.9	24	5.5	3.5	8	1.5	1.2	1.0	1.3
21	1.0	.8	1.2	.9	20	5	33	6	1.4	1.2	1.0	1.3
22	1.0	.8	1.2	8.0	18	4.5	16	6	1.4	1.2	1.0	1.2
23	1.0	.8	1.2	1.0	15	4.5	10	6	1.4	1.2	1.1	1.2
24	1.0	.9	1.2	2.0	16	4	6	6	1.4	1.2	1.1	1.2
25	1.0	.9	1.2	5.0	18	3.5	6	4	1.4	1.2	1.1	1.2
26	1.0	.9	1.2	2.0	15	3.5	5	4	1.4	1.1	1.1	1.2
27	1.0	.9	1.2	.8	13	3.5	3.5	3	1.3	1.1	1.1	1.2
28	1.0	1.0	1.2	19	11	3.5	5	2	1.3	1.1	1.1	1.2
29	1.0	1.0	1.2	175	.....	3.5	10	2	1.2	1.1	1.1	1.2
30	1.0	1.0	1.2	96	.....	3.5	20	2	1.2	1.1	1.1	1.2
31	1.0	.....	1.2	36	.....	3.5	.....	2	.....	1.1	1.1	.....

Day.	Oct.	Nov.	Day.	Oct.	Nov.	Day.	Oct.	Nov.
1915–16.			**1915–16.**			**1915–16.**		
1	1.2	1.1	11	1.1	1.0	21	1.1	.....
2	1.2	1.1	12	1.1	1.0	22	1.2	.....
3	1.2	1.1	13	1.1	1.0	23	1.2	.....
4	1.2	1.1	14	1.1	1.0	24	1.2	.....
5	1.2	1.1	15	1.1	1.0	25	1.2	.....
6	1.1	1.1	16	1.1	1.1	26	1.2	.....
7	1.1	1.1	17	1.1	1.1	27	1.2	.....
8	1.1	1.0	18	1.1	1.1	28	1.2	.....
9	1.1	1.0	19	1.1	.....	29	1.2	.....
10	1.1	1.0	20	1.1	.....	30	1.2	.....
						31	1.2	.....

NOTE.—Daily discharge determined as follows: Jan. 25 to Mar. 26, 1913, estimated from measurements and by comparison with records obtained at Mesa Grande; Mar. 27 to Aug. 25, 1913, interpolated between measurements; Aug. 26–31, 1913, estimated by Volcan Land & Water Co.; Sept. 1–30, 1913, estimated from discharge measurements; Oct. 1, 1913, to Jan. 25, 1914, Jan. 29 to Feb. 18, and Mar. 5 to Sept. 30, 1914, interpolated between measurements and by comparison with records of flow at Mesa Grande and on West Fork; Jan. 26–28, 1914, estimated as 12 per cent of flow at Mesa Grande; Feb. 19 to Mar. 4, 1914, by shifting-control method; Oct. 1, 1914, to Sept. 30, 1915, from rating curves covering short periods, interpolated between measurements, and shifting-control method, except high water. For September, 1914, see table of monthly discharge.

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Monthly discharge of San Luis Rey River near Warner Springs, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1913.				
January	1.0	1.0	1.0	14
February	25	.9	4.23	235
March	3.0	.8	1.39	85
April	1.0	.8	.89	53
May	.8	.7	.74	46
June	.8	.6	.68	40
July	.6	.5	.52	32
August	10	.4	.87	53
September	.6	.5	.59	35
The period	25	.4	1.21	593
1913–14.				
October	.8	.6	.71	44
November	1.0	.6	.83	49
December	1.1	.8	1.01	62
January	120	.8	9.35	575
February	204	.7	25.6	1,420
March	6	.8	1.16	71
April	1.3	.8	1.02	61
May	1.0	.7	.88	54
June	.7	.6	.60	36
July	.7	.7	.70	43
1913–14.				
August	0.6	0.6	0.60	37
September			.70	42
The year	204	.6	3.45	2,490
1914–15.				
October	1.0	.7	.89	55
November	1.0	.8	.87	52
December	1.2	1.0	1.18	73
January	175	.8	11.8	726
February	185	2.0	39.4	2,190
March	46	3.5	14.2	873
April	33	1.8	5.21	310
May	62	2.0	17.9	1,100
June	2	1.2	1.45	86
July	1.5	1.1	1.23	76
August	1.1	1.0	1.08	66
September	1.4	1.0	1.17	70
The year	185	.7	7.85	5,680
1915.				
October	1.2	1.1	1.15	71
November 1–18	1.1	1.0	1.06	38

SAN LUIS REY RIVER AT WARNER DAM SITE, NEAR MESA GRANDE, CALIF.

The records in the following tables were furnished by W. S. Post, consulting engineer, Los Angeles, Calif.

Discharge measurements of San Luis Rey River at Warner dam site, near Mesa Grande, Calif., for 1905–6.

[Made by G. A. Haines.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1905.	*Feet.*	*Sec.-ft.*	**1906.**	*Feet.*	*Sec.-ft.*	**1906.**	*Feet.*	*Sec.-ft.*
Dec. 6	0.30	6.9	Feb. 6	0.89	16.7	Feb. 18	1.04	31.6
19	.64	7.1	6	.90	18.7	21	1.17	74.4
1906.			9	.88	22.7	22	.98	32.3
Jan. 19	.77	7.6	10	.82	14.9	23	.91	26
19	1.80	175	10	.94	23.3	24	1.01	23.5
19	2.40	835	11	.99	37	24	1.01	22.2
19	3.00	1,650	15	2.25	519	25	1.03	19.4
Feb. 4	.74	9.8	15	2.15	460	26	1.00	17.3
5	.78	10.5	16	1.31	105	27	.98	18.5
			17	1.10	39.9	27	1.05	14.9

NOTE.—All measurements in above table made by surface floats.

Monthly discharge of San Luis Rey River at Warner dam site, near Mesa Grande, Calif., for 1905–6.

Month.	Discharge in second-feet.			Rainfall (inches).	Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.		
December	7.4	6.9	7.1	0.14	435
January	1,650	7.4	28.8	3.99	1,771
February	519	9.6	45.3	3.05	2,516
March	13,875	15.3	766	20.23	47,090
April	401	81.1	174	2.50	9,115
May	300	52.1	47.6	2.02	4,995
June	67.4	10.6	28.1	.03	1,672
July	61.5	2.5	9.47	1.52	582

NOTE. Maximum and minimum discharges in above table are absolute extremes of discharge, not mean daily values.

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SAN LUIS REY RIVER NEAR MESA GRANDE, CALIF.

LOCATION.—In NW. ¼ NE. ¼ sec. 9, T. 11 S., R. 2 E., at concrete weir 1 mile below Warner dam site, 1 mile below mouth of Carrizo Creek, and about 5 miles north of Mesa Grande, San Diego County.

DRAINAGE AREA.—209 square miles (measured on topographic maps).

ELEVATION.—About 2,650 feet above sea level.

RECORDS AVAILABLE.—October 1, 1911, to September 30, 1918.

GAGE.—Friez water-stage recorder on left bank just above weir. Barrett & Lawrence water-stage recorder at same site and datum was destroyed by flood of January, 1916. March 18, 1915, a vertical staff was installed at weir for use during low water; datum same as that of water-stage recorder. Previous to June 13, 1912, gage was just above cut-off wall at dam site. Original datum was not maintained.

DISCHARGE MEASUREMENTS.—Made from cable about a mile above gage or by wading.

CHANNEL AND CONTROL.—Sand and gravel; somewhat shifting. Concrete weir which served as control for gage was destroyed by flood of January, 1916.

EXTREMES OF DISCHARGE.—1911–1918: Maximum stage recorded, 18.0 feet January 27, 1916 (discharge, 58,600 second-feet); minimum stage recorded, 0.09 foot, Aug. 31, 1914 (discharge, 0.2 second-foot).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent, as sand collects at weir and causes slight changes in conditions. Control shifting after flood of January, 1916. Rating curves, usually covering short periods, are fairly well defined. Mean daily gage heights determined by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records good.

Discharge measurements of San Luis Rey River near Mesa Grande, Calif., for 1911-1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*	1912.		*Feet.*	*Sec.-ft.*
Oct. 11	F. C. Ebert	0.09	1.8	May 9	H. L. Davis	0.76	62
11	H. L. Davis	.09	1.7	20	do	.41	12
Dec. 13	do	.11	2.2	28	do	.36	9.4
20	do	.21	2.4	June 6	do	.32	3.3
22	do	.12	2.6	8	do	.32	3.1
22	do	.12	2.4	14	do	.28	3.4
29	do	.50	20	18	do	.27	1.8
1912.				July 4	do	.26	2.8
Jan. 17	F. C. Ebert	.32	4.4	9	do	.22	1.2
18	do	.32	4.4	13	do	.24	1.8
27	C. B. Ireland	.33	6.5	21	do	.24	1.4
Feb. 6	H. L. Davis	.27	3.4	Aug. 10	do	.26	1.4
10	F. C. Ebert	.25	3.5	14	do	.22	1.4
10	H. L. Davis	.25	3.6	17	do	.22	1.2
16	do	.25	3.2	23	do	.19	1.5
28	do	.22	3.0	27	do	.16	.9
Mar. 2	do	.40	11	31	do	.16	1.2
6	do	.92	84	Sept. 7	do	.13	1.1
11	do	.90	85	30	do	.17	1.3
12	do	.68	56	Oct. 5	do	.38	11
13	do	1.45	184	Nov. 15	E. W. Case	.18	2.0
14	do	.87	90	17	W. J. Isbell	.18	1.7
15	do	.68	59	Dec. 7	do	.18	1.7
23	do	.51	29	14	do	.21	2.6
27	do	.61	43	18	do	.21	2.6
31	do	.64	46	21	do	.22	2.4
31	F. C. Ebert	.64	48	28	do	.23	1.8
Apr. 3	H. L. Davis	.52	29	1913.			
4	do	.50	26	Jan. 4	W. J. Isbell	.23	3.0
11	do	2.15	420	9	do	.19	2.8
12	do	2.28	496	13	do	.26	4.8
13	do	1.14	146	16	do	.78	50
24	do	.56	32	17	do	.49	20
May 4	do	.46	21	24	do	.37	7.0

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Discharge measurements of San Luis Rey River near Mesa Grande, Calif., for 1911-1918—Continued.

Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*
Feb. 1	W. J. Isbell	0.33	5.1
7	do	.38	11
8	do	.61	36
14	do	.34	6.4
19	F. C. Ebert	.29	6.3
20	do	.33	7.5
22	W. J. Isbell	1.32	199
23	do	.54	27
24	do	.80	61
25	do	2.04	373
25	do	1.80	303
26	do	.82	66
Mar. 2	do	.57	29
14	do	.58	31
21	do	.48	20
26	do	.51	27
31	Lee Case	.48	21
Apr. 4	W. J. Isbell	.46	16
12	do	.42	11
18	H. D. McGlashan	.45	17
25	W. J. Isbell	.33	7.8
May 6	do	.28	4.4
9	F. C. Ebert	.28	3.8
12	W. J. Isbell	.28	4.4
16	do	.26	3.8
20	do	.25	3.7
28	do	.25	3.6
June 3	do	.26	2.2
9	do	.24	1.7
13	F. C. Ebert	.19	1.0
20	W. J. Isbell	.23	1.5
26	do	.22	1.3
July 1	do	.14	.8
10	do	.14	.6
18	do	.19	1.1
22	do	.18	.8
Aug. 18	do	.08	.7
29	F. C. Ebert	.12	1.0
31	do	.20	3.2
Sept. 4	W. J. Isbell	.08	.7
12	do	.09	1.0
15	do	.06	.8
27	do	.10	1.0
Oct. 1	do	.10	.9
6	F. C. Ebert	.10	1.1
16	W. J. Isbell	.11	1.1
22	do	.12	1.2
29	do	.14	1.2
Nov. 1	do	.13	1.0
8	do	.16	1.1
12	do	.18	1.7
13	do	.31	6.8
26	do	.22	3.4
Dec. 1	do	.20	2.0
12	do	.21	2.0
20	do	.21	2.6
23	do	.28	5.0
28	do	.24	3.4
1914.			
Jan. 5	W. J. Isbell	.22	3.0
7	do	.21	2.4
12	do	.21	2.3
16	do	.31	6.7
17	do	.35	11
18	do	.35	13
19	do	.55	29
21	do	.33	9.2
23	do	.34	10
23	F. C. Ebert	.34	9.7
25	W. J. Isbell	.50	26
26	do	3.52	1,090
27	do	4.22	1,440
27	do	2.87	722
28	do	1.17	155
28	do	.94	130
29	do	.72	79
30	do	.71	51
31	do	.60	39
1914.		*Feet.*	*Sec.-ft.*
Feb. 2	W. J. Isbell	0.51	27
3	do	.49	25
5	J. Ridder	.48	20
6	do	.46	19
9	W. J. Isbell	.43	16
12	do	.41	12
15	do	.37	12
17	do	.39	11
19	do	2.84	651
20	do	2.56	594
21	do	7.20	3,270
21	do	5.10	1,920
24	do	1.14	148
26	do	.88	94
28	Jas. Ridder	.81	73
Mar. 3	W. J. Isbell	.72	48
7	do	.63	30
9	do	.61	34
12	do	.54	24
14	do	.52	27
20	do	.46	19
23	do	.45	19
26	do	.51	23
28	do	1.12	167
Apr. 10	do	.47	19
13	do	.43	14
16	do	.42	12
20	do	.39	9.1
24	F. C. Ebert	.51	24
25	do	.50	23
May 2	W. J. Isbell	.54	24
8	do	.39	11
10	F. C. Ebert	.39	11
14	W. J. Isbell	.38	10
19	do	.39	8.1
28	do	.30	6.0
June 13	do	.26	3.0
19	do	.23	2.1
27	do	.24	1.2
July 9	do	.20	.8
24	do	.18	.6
30	do	.85	69
Aug. 21	F. C. Ebert	.18	1.0
29	W. J. Isbell	.16	1.2
Sept. 11	do	.14	.8
Oct. 12	F. C. Ebert	.20	1.5
24	W. J. Isbell	.21	1.1
Nov. 16	do	.20	1.5
24	do	.21	1.3
Dec. 7	do	.24	2.1
12	do	.42	11
19	do	.40	11
1915.			
Jan. 9	W. J. Isbell	.39	10
16	do	.27	4.2
22	do	1.22	135
25	do	.82	54
29	do	3.12	816
29	do	5.60	2,440
Feb. 2	do	5.40	2,030
8	do	.75	61
10	do	3.38	1,170
11	do	4.18	1,420
16	do	1.49	227
Mar. 7	F. C. Ebert	1.33	186
15	W. J. Isbell	1.04	119
24	do	.74	68
31	do	.71	64
Apr. 9	do	.59	43
28	do	.79	71
May 12	do	1.38	190
26	do	.78	81
June 8	do	.61	49
30	do	.35	16
July 10	do	.34	10
13	F. C. Ebert	.32	7.6
22	W. J. Isbell	.26	3.9
27	do	.23	3.5

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Discharge measurements of San Luis Rey River near Mesa Grande, Calif., for 1911-1918—Continued.

Date.	Made by—	Gage height.	Discharge.
1915.		*Feet.*	*Sec.-ft.*
Aug. 4	W. J. Isbell	0.21	2.0
9	do	.19	1.4
16	do	.16	1.5
23	do	.17	1.5
28	do	.14	1.7
Sept. 11	do	.15	1.3
15	do	.17	1.7
17	do	.16	1.2
Oct. 1	do	.16	1.7
8	do	.15	2.2
15	do	.16	1.9
23	do	.16	1.8
30	do	.15	2.6
Nov. 8	do	.22	4.8
13	do	.22	4.4
20	do	.22	4.0
Dec. 2	F. C. Ebert	.22	4.9
7	W. J. Isbell	.30	11
11	do	.28	7.7
13	F. C. Ebert	.28	6.6
15	W. J. Isbell	.45	26
23	do	.30	8.5
1916.			
Jan. 1	W. J. Isbell	.35	16
3	do	.42	24
7	do	.39	21
9	do	.85	103
16	do	1.58	248
18	do	9.06	9,850
19	do	5.44	2,630
23	do	1.78	364
26	do	2.38	561
28	do	6.70	3,830
Feb. 2	do	3.52	796
8	do	2.74	491
13	do	2.38	256
17	do	2.23	213
22	do	2.20	184
25	do	2.04	142
Mar. 3	do	2.24	185
8	do	2.04	139
17	do	2.26	96
22	do	2.70	145
29	do	1.81	114
Apr. 10	do	1.62	72
13	do	1.61	72
20	do	1.59	44
24	Ebert and Isbell	1.23	53
30	W. J. Isbell	1.44	52
May 5	do	1.29	35
10	do	1.31	36
17	do	1.26	32
25	do	1.22	25
June 3	do	1.08	16
12	do	1.01	8.6
17	do	1.02	9.6
24	do	.99	6.0
28	do	.99	9.0
July 6	do	.95	4.7
12	do	.92	1.9
17	F. C. Ebert	.92	2.2
24	W. J. Isbell	.91	2.1
Aug. 2	E. W. Case	.89	2.3
6	do	.86	1.8
12	do	.90	2.3
19	do	.90	3.0
19	do	.91	3.1
25	do	4.07	906
25	do	2.25	250
26	do	.96	6.1
Sept. 2	do	.81	1.4
9	do	.86	2.9
16	do	.88	2.5
23	do	.88	2.4
30	do	.94	3.9
Oct. 7	do	1.12	18
14	do	1.14	19
21	do	1.00	7.3
1916.		*Feet.*	*Sec.-ft.*
Oct. 28	E. W. Case	1.01	8.1
Nov. 4	do	1.07	11
11	do	1.18	9.5
18	do	1.29	11
25	do	1.31	14
Dec. 2	do	1.50	20
9	do	1.44	15
16	do	1.42	13
23	do	1.54	17
30	do	1.72	40
1917.			
Jan. 3	E. W. Case	3.00	332
6	do	1.67	39
13	do	2.31	136
22	do	2.00	77
27	do	1.80	50
Feb. 3	do	1.70	37
10	do	1.65	37
17	do	3.35	410
23	do	4.20	825
24	do	2.66	240
Mar. 6	do	1.96	66
18	do	1.80	54
24	do	1.74	42
Apr. 3	do	1.67	34
7	do	1.60	30
14	do	1.60	30
17	do	2.37	222
May 1	Angel and Case	1.70	43
5	Phillip Angel	1.70	31
10	A. E. Bartl	1.71	42
16	do	1.55	21
19	do	1.79	44
22	F. C. Ebert	1.55	24
22	Ebert and Bartl	1.57	24
26	E. A. Bartl	1.82	49
June 2	do	1.52	24
8	do	1.44	12
15	do	1.40	8.5
23	do	1.24	1.9
Aug. 4	Bartl and Miller	1.24	2.3
11	A. R. Miller	1.22	1.9
18	do	1.20	2.0
24	McClung and Campbell	1.43	1.5
25	A. R. Miller	1.22	2.4
31	do	1.22	2.3
Sept. 8	do	1.18	2.2
15	do	1.20	2.3
21	do	1.36	12
29	do	1.20	2.7
Oct. 6	do	2.60	2.8
13	do	2.63	3.6
20	do	2.46	2.4
27	do	2.60	2.6
Nov. 3	do	2.56	2.8
7	do	2.86	12
17	do	2.75	4.0
24	do	2.85	4.6
Dec. 1	do	2.83	6.2
8	do	2.83	4.2
15	do	2.89	8.8
22	do	2.89	8.0
24	F. C. Ebert	2.89	7.8
29	A. R. Miller	2.88	7.4
1918.			
Jan. 5	A. R. Miller	2.90	10
12	do	2.91	11
13	do	3.30	67
19	do	3.00	11
26	do	3.26	52
27	do	3.10	31
Feb. 2	do	2.93	9.4
9	do	2.85	5.8
16	do	2.87	8.1
18	do	3.54	178
22	do	3.80	246
Mar. 2	do	2.95	13

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Discharge measurements of San Luis Rey River near Mesa Grande, Calif., for 1911-1918—Continued.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1918.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
Mar. 7	A. R. Miller	3.38	111	June 15	A. R. Miller	2.82	4.7
7	do	3.54	250	22	do	2.78	5.1
8	do	3.78	278	29	do	2.84	2.9
11	do	6.15	2,070	July 6	do	2.83	2.3
12	do	9.32	6,590	13	do	2.84	2.2
21	do	3.46	158	20	do	2.81	2.0
30	do	3.18	40	27	do	2.83	2.0
Apr. 6	do	3.02	37	Aug. 3	do	2.83	2.1
14	do	3.04	28	10	do	2.81	2.7
20	do	2.90	19	14	McClung and Miller	2.83	1.9
27	do	2.90	20	17	A. R. Miller	2.84	2.2
May 4	do	2.88	14	24	do	2.84	1.7
7	F. C. Ebert	2.85	13	31	do	2.90	3.0
11	A. R. Miller	2.88	20	Sept. 7	do	2.82	1.6
18	do	2.82	11	14	do	2.83	2.3
25	do	2.80	9.6	21	do	2.84	2.9
June 1	do	2.84	12	28	do	2.84	2.2
8	do	2.68	6.2				

Daily discharge, in second-feet, of San Luis Rey River near Mesa Grande, Calif., for 1911–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	1.8	1.8	1.6	4.3	4.1	5.8	37	24	6.2	2.0	1.1	1.7
2	1.8	1.7	1.6	3.4	4.3	10	32	25	8.2	2.0	1.2	1.4
3	1.8	1.7	1.6	3.6	4.7	7.4	28	20	4.8	2.4	1.2	1.4
4	1.7	1.6	1.7	4.3	4.5	25	25	20	4.4	2.5	1.2	1.8
5	1.8	1.6	1.8	3.6	4.3	20	25	21	3.8	2.2	1.1	1.6
6	1.8	1.6	1.8	4.7	4.1	119	25	21	3.3	1.8	1.1	1.7
7	1.9	1.7	2.3	4.7	3.9	30	21	22	4.0	2.3	1.3	1.2
8	1.7	1.7	2.0	4.7	3.9	17	17	70	3.1	1.7	1.3	1.4
9	1.7	1.8	2.0	4.7	3.6	46	28	88	4.3	1.3	1.3	1.7
10	1.7	1.7	1.8	4.7	3.6	790	42	42	4.8	1.4	1.2	1.7
11	1.7	1.7	1.9	4.7	4.1	71	360	26	5.3	1.3	1.3	1.7
12	1.7	1.6	1.9	5.2	4.3	113	392	24	5.5	1.4	1.2	1.7
13	1.7	1.7	1.9	5.2	4.1	254	157	22	4.0	1.6	1.1	1.7
14	1.7	1.8	1.8	4.7	3.9	84	148	18	3.4	1.6	1.1	1.6
15	1.7	1.7	1.8	4.7	3.9	51	164	17	4.6	1.5	1.2	1.6
16	1.7	1.7	1.8	4.7	3.6	46	162	16	3.0	1.7	1.2	1.5
17	1.7	1.7	3.9	6.8	3.9	42	131	15	2.0	1.9	1.2	1.4
18	1.7	1.6	3.9	5.8	3.4	34	102	15	2.2	2.6	1.5	1.3
19	1.8	1.6	3.2	5.8	3.6	31	76	13	1.8	1.8	1.5	1.2
20	1.8	1.6	2.8	5.2	3.2	31	58	13	2.1	1.3	1.4	1.2
21	1.7	1.6	3.4	4.7	3.2	34	50	13	1.9	1.6	1.8	1.3
22	1.8	1.7	2.0	4.7	3.4	37	43	13	1.9	1.4	1.6	1.3
23	2.0	1.7	2.0	4.7	3.2	25	43	12	2.4	1.4	1.4	1.4
24	2.0	1.7	2.3	4.7	3.2	25	34	12	2.3	1.2	1.3	1.5
25	2.0	1.7	2.0	4.7	3.2	22	34	11	2.2	1.3	1.2	1.5
26	2.0	1.7	1.8	4.7	2.8	53	30	11	2.2	1.0	1.0	1.6
27	2.4	1.7	1.8	6.3	3.0	42	40	15	2.2	1.1	.8	1.6
28	2.3	1.7	2.6	4.3	3.0	32	30	9.4	2.4	1.1	2.2	1.6
29	1.7	1.7	15	3.9	3.0	46	28	7.0	2.9	1.3	2.1	1.5
30	1.7	1.6	4.5	4.1	.....	145	24	9.8	1.8	1.3	1.5	1.5
31	1.7	.....	4.1	4.1	.....	48	.....	8.2	.....	1.3	1.3	.....

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Daily discharge, in second-feet, of San Luis Rey River near Mesa Grande, Calif., for 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	1.5	2	2	2	5.5	33	20	6.5	2.5	0.7	0.9	1
2	1.5	2.5	2	2	5.5	30	20	6.5	2	.7	.9	1
3	22	2	2	2.5	5.5	30	18	6	2	.7	.9	.8
4	7	2	2	3	5.5	28	15	5.5	2	.8	.9	.7
5	11	2	2	2.5	7.5	27	16	5	2	.8	1	.7
6	4.5	2	2	3.5	13	29	15	4.5	2	.8	1	.7
7	3	2	2	3.5	11	30	14	4.5	1.5	.8	1	.7
8	3	2	2	2.5	26	30	12	4	1.5	.8	1	.8
9	2.5	2	2	3	16	28	13	4	1.5	.7	1	.8
10	2.5	2	2	4	9	26	12	4	1.5	.7	1	.9
11	3	2	2	13	6	30	9	4.5	1	.9	1	.9
12	3	2	2	5	6	56	7	4.5	1	.9	1	1
13	3	2	2	5	5.5	44	7.5	4.5	1	.8	1	.9
14	3.5	2	2.5	5	6.5	30	7.5	4	1	.7	.8	.9
15	3	2	2	6.5	6.5	23	8.5	4	1	.7	.8	.8
16	3	2	2.5	64	6.5	22	8.5	4	1	.8	.8	.9
17	3	2	2.5	21	6.5	22	7.5	4	1.5	.9	.7	.9
18	3	2	2.5	13	6.5	20	16	4	1.5	1	.7	.9
19	3	2	3	8.5	6.5	20	14	3.5	1.5	1	.7	.9
20	3	2	3	7.5	6.5	22	14	3.5	1.5	1	.8	.9
21	2.5	2	3	7.5	48	20	12	3.5	1	1	.8	1
22	2.5	2	2.5	7	170	26	11	3.5	1	.9	.8	1
23	2.5	2	2.5	7	34	37	9.5	3.5	1	.8	.8	1
24	2.5	2	3	7.5	52	61	9	3.5	1	.8	.9	1
25	2.5	2	2.5	7.5	200	36	8	3.5	1.5	.9	.9	1
26	2.5	2	2	7.5	77	32	8	3.5	1.5	1	.8	1
27	2.5	2	2	7.5	135	29	7	3.5	1.5	1	.8	1
28	2.5	2	2	7	61	27	7	3.5	1	1	26	1
29	2.5	2	2	6.5	.....	24	7	3	1	1	14	1
30	2	2	1.5	4.5	.....	22	6.5	3	.9	1	2.5	1
31	2	.....	2	4.5	.....	21	.....	3	.....	.9	1.5	.....
1913–14.												
1	.9	1.0	2.0	2.9	40	60	34	24	6	1.4	2.7	.3
2	.9	1.0	3.2	2.9	27	57	37	24	6	1.5	2.6	.4
3	1.0	1.0	3.4	2.9	25	48	30	16	6	1.5	2.5	.6
4	1.0	1.0	3.4	2.9	24	43	23	16	6	1.5	2.4	1.7
5	1.1	1.1	3.2	2.9	20	41	22	16	5	1.4	2.3	1.3
6	1.1	1.1	3.2	2.9	19	37	22	18	5	1.2	2.0	1.1
7	1.1	1.1	2.8	2.9	18	30	21	16	5	1.0	2.2	1.3
8	1.1	1.1	2.8	2.9	17	31	21	13	5	.9	2.2	1.7
9	1.1	1.1	3.2	2.9	16	34	21	12	5	.8	1.8	1.5
10	1.1	1.1	3.2	3.2	13	32	20	12	5	.8	1.3	1.1
11	1.1	1.1	2.0	2.8	13	28	18	12	5	.8	1.3	.6
12	1.1	2.2	2.0	2.3	12	26	18	11	4	.8	1.2	.6
13	1.1	6.2	2.0	2.3	12	26	14	10	3.3	.8	1.1	.6
14	1.1	2.4	2.3	2.5	12	27	14	10	3.2	.9	1.1	.6
15	1.1	2.4	2.5	3.5	13	24	12	10	3.1	.8	1.0	.6
16	1.1	2.4	1.8	27	11	24	11	9	2.3	.8	1.0	.4
17	1.1	2.4	2.5	14	11	20	12	9	2.3	.9	1.0	.3
18	1.2	2.4	2.2	25	75	20	10	9	2.2	.9	1.0	.4
19	1.2	2.4	2.1	28	900	19	12	8	2.1	.9	1.0	.4
20	1.2	2.4	2.6	16	1,380	19	9	8	1.9	.7	1.0	.4
21	1.2	2.4	3.2	9.2	2,460	19	12	10	2.2	.9	1.0	.6
22	1.2	2.4	4.8	8.8	533	19	49	8	2.0	.8	.3	.8
23	1.2	2.4	5.0	9.8	242	19	36	10	1.9	.6	.3	.9
24	1.2	2.4	5.0	11	163	18	23	10	1.7	.6	.4	1.5
25	1.2	2.4	5.0	26	128	20	23	10	1.5	.6	.4	1.3
26	1.2	2.4	4.3	875	97	21	22	10	1.4	.6	1.2	.8
27	1.2	2.5	4.0	1,000	87	22	23	8	1.2	.6	1.0	.6
28	1.2	2.4	3.4	174	73	119	26	6	1.4	.7	1.1	.8
29	1.2	2.2	3.4	88	.....	46	32	6	1.4	.7	1.2	.6
30	1.2	2.1	3.4	49	.....	122	24	6	1.4	15	.3	.6
31	1.1	.....	3.4	40	.....	43	.....	6	.....	2.7	.2	.....

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Daily discharge, in second-feet, of San Luis Rey River near Mesa Grande, Calif., for 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	0.7	1.2	2.3	4.1	147	402	54	552	60	15	2.5	1.5
2	.8	1.2	2.6	3.4	1,050	492	50	605	60	15	2.5	1.5
3	.8	1.2	2.6	4.1	500	364	47	582	60	14	2	1.5
4	.8	1.2	2.6	6.0	169	303	47	605	59	13	2	1.5
5	.9	1.2	2.6	4.4	156	274	48	925	59	13	2	1.5
6	1.0	1.2	2.6	4.8	147	231	52	618	54	12	2	1.5
7	1.0	1.6	3.4	4.4	147	202	48	435	50	11	1.5	1.5
8	1.1	1.2	2.6	5.4	92	164	48	341	46	11	1.5	1.5
9	1.2	1.2	1.2	10	422	162	47	282	45	10	1.5	1.5
10	1.2	1.2	2.6	7.9	1,460	223	47	273	44	10	1.5	1.5
11	1.2	1.2	4.8	6.7	1,540	179	46	273	43	9	1.5	1.5
12	1.2	1.2	12	5.4	685	172	47	195	42	8	1.5	1.5
13	1.2	1.2	9.1	5.4	452	145	46	159	41	7.5	1.5	1.5
14	1.2	1.2	4.8	6.0	321	142	48	145	39	7	1.5	1.5
15	1.2	1.2	7.3	5.4	279	131	54	131	38	7	1.5	1.5
16	1.2	1.2	7.9	5.4	210	120	52	116	36	7	1.5	1.5
17	1.2	1.2	18	4.8	192	100	44	145	35	6	1.5	1.5
18	1.2	1.2	15	5.4	149	93	43	162	33	6	1.5	1.5
19	1.2	1.2	9.8	5.4	145	90	43	141	32	5	1.5	1.5
20	1.2	1.2	6.7	5.4	368	84	37	132	30	5	1.5	1.5
21	1.2	1.2	7.9	7.9	349	76	204	137	29	4	1.5	1.5
22	1.2	1.2	6.0	65	274	73	271	132	27	4	1.5	1.5
23	1.2	1.2	4.8	12	245	71	114	128	26	4	1.5	1.5
24	1.6	1.6	4.8	16	271	71	85	107	24	4	1.5	1.5
25	1.2	1.6	4.1	45	412	71	65	95	23	3.5	1.5	1.5
26	1.2	1.6	4.1	16	197	69	79	84	21	3.5	1.5	1.5
27	1.2	1.6	4.1	5.4	142	71	72	80	20	3.5	1.5	1.5
28	1.2	1.6	4.1	156	140	67	76	75	18	3.5	1.5	1.5
29	1.2	1.6	4.4	1,460	.....	95	106	69	17	3.5	1.5	1.5
30	1.2	1.6	3.7	800	.....	71	334	64	16	3	1.5	1.5
31	1.2	.....	3.7	303	.....	66	.....	54	.....	3	1.5	.....
1915–16.												
1	1.7	2.8	4.8	16	870	350	100	42	22	7	2.3	1.5
2	1.7	2.8	4.9	25	820	290	100	41	20	6.5	2.3	1.4
3	1.7	2.8	5.5	24	640	185	100	40	18	6	2.2	1.6
4	1.8	2.8	24	20	705	170	110	39	19	5.5	2.1	1.8
5	1.9	3.3	24	29	620	490	100	38	19	5	2.0	2.0
6	2.0	4.4	12	36	600	220	90	38	19	4.7	1.8	2.2
7	2.1	4.4	11	21	540	175	80	37	18	4.5	1.9	2.4
8	2.2	5.0	10	16	485	139	80	36	18	4.0	2.0	2.6
9	2.2	6.5	9	103	475	130	70	34	17	3.5	2.1	2.9
10	2.1	10	8	40	425	110	70	33	16	3.0	2.2	2.9
11	2.1	6.5	7.5	42	380	200	80	32	14	2.5	2.3	2.8
12	2.0	4.4	7	43	320	185	100	32	10	1.9	2.3	2.7
13	2.0	4.4	6.5	44	260	155	80	32	12	1.9	2.4	2.7
14	1.9	4.3	18	46	240	145	66	32	10	2.0	2.5	2.6
15	1.9	4.2	26	170	240	135	68	30	10	2.1	2.6	2.5
16	1.9	4.2	16	1,550	210	120	58	29	9	2.2	2.7	2.5
17	1.9	4.1	15	13,000	210	96	55	29	9	2.2	2.8	2.5
18	1.9	4.1	13	10,100	210	90	51	30	8.5	2.2	2.9	2.5
19	1.9	4.0	12	2,740	190	85	47	48	8	2.2	3.0	3.0
20	1.8	4.0	11	896	180	145	44	37	7.5	2.2	3.0	3.0
21	1.8	4.0	11	536	295	175	46	36	7.5	2.1	3.0	2.5
22	1.8	4.0	9.5	428	190	145	48	33	7	2.1	3.5	2.5
23	1.8	4.1	8.5	352	180	390	50	32	6.5	2.1	4.0	2.4
24	1.9	4.2	9.5	354	160	215	53	31	6	2.1	5	2.6
25	2.0	4.3	11	775	145	215	53	31	6.5	2.1	101	2.8
26	2.1	4.4	12	806	260	155	53	28	7	2.1	6	3.0
27	2.2	4.5	12	28,100	385	155	52	27	8	2.2	2.0	3.2
28	2.3	4.5	14	6,130	185	140	52	24	9	2.2	1.8	3.4
29	2.4	4.6	14	2,060	300	125	52	24	8	2.2	1.8	3.6
30	2.6	4.7	18	1,610	.....	110	52	24	7.5	2.2	1.8	3.9
31	2.6	.....	17	1,020	.....	100	.....	23	.....	2.3	1.7	.....

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Daily discharge, in second-feet, of San Luis Rey River near Mesa Grande, Calif., for 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	4.0	8.5	14	36	38	101	45	43	24	1.6	3.4	2.3
2	15	8.5	18	36	36	90	44	40	22	2.2	3.7	2.3
3	30	10	17	220	37	73	36	37	20	1.9	2.8	2.2
4	34	12	18	77	36	70	35	34	18	2.2	2.2	2.2
5	32	17	19	50	36	66	32	31	16	2.8	2.2	2.2
6	20	21	18	41	37	62	32	33	14	3.4	2.8	2.2
7	20	13	16	38	39	52	30	35	12	2.2	2.3	2.2
8	13	11	17	38	41	50	30	37	11	1.0	2.0	2.2
9	10	8	11	38	40	73	33	39	13	.9	2.0	2.2
10	14	8.5	9	37	36	143	49	42	13	.9	2.3	2.2
11	18	9	7	35	37	127	36	38	13	.8	1.9	2.2
12	15	10	13	47	37	101	42	35	14	1.0	2.0	2.3
13	17	9	19	111	37	77	42	32	11	1.6	2.0	2.3
14	19	8	19	50	37	79	35	28	11	1.3	2.0	2.3
15	13	8.5	18	86	31	74	30	24	9	.9	2.0	2.3
16	10	10	14	135	30	68	780	21	8	1.0	2.1	2.3
17	12	12	14	70	251	62	395	21	6	.8	2.0	2.3
18	11	13	13	182	242	55	150	46	5	1.0	2.0	2.3
19	10	13	14	323	180	55	129	44	4.0	.9	2.0	2.3
20	8.5	13	15	140	160	59	117	36	6.5	1.0	1.9	35
21	11	13	15	117	115	50	96	30	3.4	1.3	1.8	16
22	10	13	16	84	506	49	66	24	3.7	1.0	1.7	3.5
23	12	13	17	65	874	48	64	24	3.4	1.0	1.6	3.0
24	11	13	89	50	352	42	56	39	3.2	1.3	1.5	3.5
25	12	13	454	45	340	42	48	58	3.0	5	2.4	3.5
26	11	14	148	49	195	42	44	46	2.7	1.6	2.4	2.7
27	9.5	14	68	49	136	42	46	33	2.5	1.3	2.4	2.7
28	9.5	13	58	48	110	44	45	29	2.3	4.0	2.3	2.7
29	8.5	13	49	49	.....	44	46	29	2.0	3.7	2.3	2.7
30	8.5	14	40	50	.....	42	45	28	1.8	2.8	2.3	2.7
31	8.5	.....	36	48	.....	44	.....	26	.....	4.0	2.3	.....
1917–18.												
1	2.5	2.7	6	8	9	14	20	17	12	2.8	2.1	2.8
2	2.5	2.8	6	9	9	13	48	16	11	2.7	2.1	2.6
3	2.5	2.8	5.5	9	8	12	51	15	10	2.6	2.1	2.4
4	2.5	5.5	5	9	7	11	40	14	9	2.5	2.1	2.2
5	2.0	6	5	9	9	10	37	14	8	2.4	2.2	2.0
6	2.8	7	4.5	9	9	58	37	13	7.5	2.3	2.3	1.8
7	2.5	8	4.5	9	9	340	36	13	7	2.3	2.4	1.6
8	2.5	8	4.2	10	9	284	34	15	6.5	2.3	2.5	1.7
9	2.5	7.5	4.5	10	6	133	31	17	6.5	2.3	2.6	1.8
10	2.5	7	5	9	5	210	29	19	6	2.2	2.7	1.9
11	2.5	6.5	5.5	9	5	1,080	28	20	5.5	2.2	2.5	2.0
12	2.5	6.5	6	11	7	4,030	34	16	5.5	2.2	2.3	2.1
13	3.6	6	7	43	8	820	28	17	5	2.2	2.1	2.2
14	3.5	5.5	8	10	8	183	28	18	4.9	2.2	1.9	2.3
15	3.3	5.5	8.5	8	8	139	26	19	4.7	2.2	2.0	2.4
16	3.1	5	8.5	9	8	110	24	20	13	2.1	2.1	2.5
17	2.9	5	8.5	8	8	100	23	15	5	2.1	2.2	2.6
18	2.7	4.9	8.5	7	132	94	21	11	4.0	2.0	2.2	2.7
19	2.5	4.9	8	8	96	300	20	11	29	2.0	2.1	2.8
20	2.4	4.8	8	7	73	320	19	10	19	2.0	2.0	2.9
21	2.4	4.8	8	5	66	160	15	9	6	2.0	1.9	2.9
22	2.5	4.7	8	4	153	115	14	10	5	2.0	1.8	2.8
23	2.5	4.7	8	4	36	78	15	10	6	2.0	1.7	2.7
24	2.5	4.6	8	4	17	74	17	10	9	2.0	1.7	2.6
25	2.6	4.8	8	27	17	60	19	8.5	10	2.0	1.9	2.5
26	2.6	5	8	55	18	54	20	8.5	5	2.0	2.1	2.4
27	2.6	5	7.5	30	17	46	20	8.5	4.0	2.0	2.3	2.3
28	2.6	5.5	7.5	15	14	46	20	14	3.5	2.0	2.4	2.2
29	2.6	5.5	7.5	12	.....	43	19	22	2.9	2.0	2.6	2.2
30	2.7	6	7.5	11	.....	40	18	18	2.9	2.0	2.8	2.2
31	2.7	.....	8	10	.....	32	.....	16	.....	2.0	3.0	.....

NOTE.—Daily discharge determined as follows 1911–12: Oct. 3, 1911, to Mar. 11, 1912, and Mar. 12 to May 20, 1912, from fairly well defined rating curves: Discharge estimated Oct. 1 and 2, 1911, and Mar. 9, 1912. Shifting-control method used May 21 to Aug. 31, 1912. For September, 1912, the discharge was obtained by a 2-foot Cippoletti weir installed 66 feet above gage, and by interpolation between discharge measurements.

1912–13 and 1913–14: From fairly well defined rating curves, usually covering short periods, and by shifting-control method.

1915–16: No record from Barrett & Lawrence water-stage recorder after Dec. 31, 1915; staff gage read Jan. 1 to Apr. 30, 1916; discharge computed from hydrograph Jan. 16–31; gage not read Jan. 2, 4, 6, 8, 11–13, June 29–30, July 11, Aug. 31, Sept. 1, 3–5, and 22; discharge estimated.

1916–17: Staff gage read Nov. 7 to Dec. 12, 1916, and June 2 to Sept. 30, 1917. No gage-height record June 24–30, 1917; discharge interpolated.

1917–18: Water-stage recorder not in use Oct. 1–12; staff read. There were frequent changes in channel during the year 1917–18.

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Monthly discharge of San Luis Rey River near Mesa Grande, Calif., for 1911–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1911–12.				
October	2.4	1.7	1.83	111
November	1.8	1.6	1.68	100
December	15	1.6	2.73	168
January	6.8	3.4	4.72	290
February	4.7	2.8	3.69	212
March	790	5.8	75.4	4,640
April	392	17	79.5	4,730
May	88	7.0	21.1	1,300
June	8.2	1.8	3.43	204
July	2.6	1.0	1.62	99.6
August	2.2	.8	1.32	81.2
September	1.8	1.2	1.51	89.8
The year	790	.8	16.6	12,000
1912–13.				
October	22	1.5	3.73	229
November	2.5	2	2.02	120
December	3	1.5	2.23	137
January	64	2	8.10	498
February	200	5.5	33.7	1,870
March	61	20	29.5	1,810
April	20	6.5	11.3	672
May	6.5	3	4.13	254
June	2.5	.9	1.40	83
July	1	.7	.85	52
August	26	.7	2.18	134
September	1	.7	.90	54
The year	200	.7	8.18	5,910
1913–14.				
October	1.2	.9	1.12	69
November	6.2	1.0	2.02	120
December	5.0	1.8	3.15	194
January	1,000	2.3	78.8	4,840
February	2,460	11	230	12,800
March	122	18	35.9	2,210
April	49	9	21.7	1,290
May	24	6	11.4	701
June	6	1.2	3.28	195
July	15	.6	1.42	87
August	2.7	.2	1.29	79
September	1.7	.3	.82	49
The year	2,460	.2	31.2	22,000
1914–15.				
October	1.6	.7	1.13	69
November	1.6	1.2	1.31	78
December	18	1.2	5.55	341
January	1,460	3.4	96.6	5,940
February	1,540	92	381	21,200
March	492	66	157	9,650
April	334	37	78.5	4,670
1914–15.				
May	925	54	253	15,600
June	60	16	37.6	2,240
July	15	3	7.45	458
August	2.5	1.5	1.63	100
September	1.5	1.5	1.50	89
The year	1,540	.7	83.4	60,400
1915–16.				
October	2.6	1.7	2.01	124
November	10	2.8	4.41	262
December	26	4.8	12.3	756
January	28,100	16	2,290	141,000
February	870	145	370	21,300
March	490	85	180	11,100
April	110	44	68.7	4,090
May	48	23	33.3	2,030
June	22	6	11.9	708
July	7	1.9	3.06	188
August	101	1.7	5.77	355
September	3.9	1.4	2.60	155
The year	28,100	1.4	260	182,000
1916–17.				
October	34	4.0	14.4	885
November	21	8	11.9	708
December	454	7	41.7	2,560
January	323	35	78.8	4,850
February	874	30	144	8,000
March	143	42	65.4	4,020
April	780	30	89.3	5,310
May	58	21	34.3	2,110
June	24	1.8	9.28	552
July	5	.8	1.82	112
August	3.7	1.5	2.21	136
September	35	2.2	4.03	240
The year	874	.8	40.8	29,500
1917–18.				
October	3.6	2.0	2.65	163
November	8	2.7	5.42	323
December	8.5	4.2	6.86	422
January	55	4.0	12.5	769
February	153	5	27.5	1,530
March	4,030	10	291	17,900
April	51	14	26.4	1,570
May	22	8.5	14.3	879
June	29	2.9	7.78	463
July	2.8	2.0	2.18	134
August	3.0	1.7	2.22	137
September	2.9	1.6	2.34	139
The year	4,030	1.6	33.7	24,400

SAN LUIS REY RIVER AT DIVERSION FLUME, CALIF.

Measurements of the flow of San Luis Rey River at a diversion flume in sec. 23, T. 10 S., R. 1 E., were made in 1894 and 1895, and the daily discharge of the river, supposedly at this same point, has been computed for 1896 to 1899, although it is not definitely known that the records for 1899 refer to the point of measurement in 1894–95.

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Discharge measurements of San Luis Rey River at diversion flume, Calif., for 1894–95.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
1894.		*Sec.-ft.*	1895.		*Sec.-ft.*
May —	E. F. Tabor	[a] 6,720	Mar. 8	E. F. Tabor	152
Oct. —	do	4	Apr. 11	do	109
Dec. 8	do	10	17	do	72
20	do	240	May 10	do	39
			19	do	19
1895.					
Jan. 15	E. F. Tabor	[a] 5,000			

[a] Estimated.

Daily discharge, in second-feet, of San Luis Rey River at diversion flume, Calif., for 1896–1899.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1896–97.							
1		3	5	7			
2		3	5	7			
3		2	5	6			79
4		2	5	6			
5		2	5	6			
6		3	5	6			
7		3	5	5			
8		3	5	5			
9		3	4	5			
10		4	4	10	24		31
11		5	5	18	21		26
12		5	5	37	21		31
13		4	5	21	21		35
14		3	5		21		33
15		2	40		19		28
16		3	13		19		27
17		2	9		21		24
18		2	8		29		24
19		2	7				22
20		3	6				22
21		3	5	24			
22		3	5	21			
23		3	5	19			
24		7	5	19	300		
25		17	4	19			
26			4	19			
27	7	7	4	21			
28	10	7	13	19			
29	8	7	38	24			
30	4	5	10	30			
31			7	33			

Day.	Dec.	Jan.	Feb.	Mar.	Day.	Dec.	Jan.	Feb.	Mar.
1897–98.					1897–98.				
1		5	16	8	16	7	21	10	17
2	4	5	16	8	17	6	26	13	22
3	4	9	16	8	18	19	38	22	21
4	4		15	8	19		19	17	26
5	4	6	15	8	20	10	18	13	28
6	3	8	13	8	21	10	14	12	20
7	3	8	15	8	22		13	19	17
8	3	50		8	23		40	10	18
9	2.5		22	8	24		35	9	15
10	2.5		19	27	25	9	26	9	
11	2.5		17	33	26	9	20	9	
12	2.5		15	21	27	9	14	9	
13	2.5		12	17	28	8	19	9	
14	2.5	19	10	18	29	8	22		
15	2.5	19	10	24	30	8	19		
					31	6	16		

NOTE.—The above record is very incomplete, as the discharge was measured over a weir in the flume, and at times of high water no record was kept. The river was probably dry during the summer months.

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Daily discharge, in second-feet, of San Luis Rey River at diversion flume, Calif., for 1894–95—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1899.												
1	0.0	3.0	5.6	10.9	(a)	10.0	(a)	(a)	(a)	(a)	0.0	0.0
2	.0	20.0	5.3	9.3	.....	10.0	.....	.....	.....	.....	.0	.0
3	.0	33.0	5.0	9.0	.....	.0	.....	.....	.....	.....	.0	.0
4	.0	13.3	4.7	8.6	.....	.0	.....	.....	.....	.....	.0	.0
5	.0	14.9	4.1	8.1	.....	.0	.....	.....	.....	.....	.0	.0
6	.0	10.1	3.6	7.8	.....	.0	.....	.....	.....	.....	.0	.0
7	.0	10.2	3.6	7.3	.....	.0	.....	.....	.....	.....	.0	.0
8	.0	10.2	3.6	6.5	.....	.0	.....	.....	.....	.....	.0	.0
9	.0	9.3	3.6	6.2	.....	.0	.....	.....	.....	.....	.0	.0
10	.0	9.0	3.6	5.9	.....	.0	.....	.....	.....	.....	.0	.0
11	24.0	8.6	3.6	5.3	.....	.0	.....	.....	.....	.....	.0	.0
12	.0	7.8	3.6	4.9	.....	.0	.....	.....	.....	.....	.0	.0
13	.0	7.8	3.6	4.6	.....	.0	.....	.....	.....	.....	.0	.0
14	10.0	7.8	3.6	4.4	.....	.0	.....	.....	.....	.....	.0	.0
15	.0	7.8	3.6	4.1	.....	.0	.....	.....	.....	.....	.0	.0
16	6.0	7.3	3.6	3.9	.....	.0	.....	.....	.....	.....	.0	2.0
17	6.0	6.9	24.4	3.6	.....	.0	.....	.....	.....	.....	.0	.0
18	6.0	5.9	24.4	.0	.....	.0	.....	.....	.....	.....	.0	4.8
19	5.6	5.6	11.7	.0	.....	.0	.....	.....	.....	.....	.0	3.6
20	5.3	5.3	11.7	.0	.....	.0	.....	.....	.....	.....	.0	.0
21	4.9	4.9	25.0	.0	.....	.0	.....	.....	.....	.....	.0	.0
22	4.7	4.7	18.5	.0	.....	.0	.....	.....	.....	.....	.0	.0
23	3.0	4.7	13.3	.0	.....	.0	.....	.....	.....	.....	3.0	.0
24	3.6	16.8	11.7	.0	.....	.0	.....	.....	.....	.....	.0	.0
25	3.6	10.1	10.9	.0	.....	.0	.....	.....	.....	.....	.0	2.6
26	3.6	7.5	19.5	4.7	.....	.0	.....	.....	.....	.....	.0	.0
27	3.4	6.6	11.7	4.1	.....	.0	.....	.....	.....	.....	.0	.0
28	3.0	5.9	10.9	.0	.....	.0	.....	.....	.....	.....	.0	.0
29	3.0	.....	17.8	.0	.....	.0	.....	.....	.....	.....	.0	.0
30	3.0	.....	15.1	.0	.....	.0	.....	.....	.....	.....	.0	7.2
31	3.0	.....	11.7	.....	.....	.....	.....	.....	.....	.....	.....	5.4

[a] River dry for month.

SAN LUIS REY RIVER NEAR NELLIE, CALIF.

LOCATION.—Near west line of sec. 33, T. 10 S., R. 1 E. (unsurveyed), in Potrero Indian Reservation, 500 feet above intake of Escondido Mutual Water Co.'s canal, 8 miles below gaging station at Warner dam site near Mesa Grande, and about 4½ miles southwest of Nellie, San Diego County.

DRAINAGE AREA.—240 square miles (measured on topographic maps).

ELEVATION.—About 1,800 feet above sea level.

RECORDS AVAILABLE.—October 1, 1915, to June 30, 1916 (not complete).

GAGE.—Friez water-stage recorder on left bank, with reinforced concrete well, 500 feet above intake of Escondido Mutual Water Co.'s canal. This equipment was destroyed by the floods of January, 1916. March 10, 1916, a temporary staff was installed, at an independent datum, and June 16 the datum was lowered 1.88 feet.

DISCHARGE MEASUREMENTS.—Made from cable 400 feet above gage or by wading. This equipment was destroyed by the floods of January, 1916.

CHANNEL AND CONTROL.—Bed sand and boulders overlying solid rock; shifting. A concrete control, extending to bedrock, was built across channel 30 feet below gage; it was destroyed by the floods of January, 1916.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent on account of accumulation of sand at control. Mean daily gage height determined by inspecting recorder graph, October 15 to January 8. Gage read to hundredths once daily, April 1 to June 30. Daily discharge ascertained as follows: October 1–14, estimated from discharge measurements, as water-stage recorder was not installed until October 15; October 15 to November 3, by shifting-control method; November 4 to December 3, from an average rating curve fairly well defined; December 4 to January 8, by shifting-control method; January 9–14, by comparison with record obtained at Mesa Grande, as gage-height record was lost; January 16–31, from detailed study of mean precipitation, computed for drainage area, compared with other records

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of flow of San Luis Rey River; April 1 to June 30 from well-defined rating curves; discharge interpolated for days when gage was not read. No gage-height record during February and March. Records good for low and medium stages; high-water record fair.

Discharge measurements of San Luis Rey River near Nellie, Calif., for 1912–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1912.				1915.			
Apr. 20	H. L. Davis		88	Sept. 27	Ebert and Dixon	0.26	4.5
May 2	F. C. Ebert		22	Oct. 1	W. J. Isbell		2.6
14	E. W. Case		14	8	do		3.5
22	F. C. Ebert		4.6	15	do	.86	5.0
June 16	H. L. Davis		6.4	22	do	.86	3.8
25	Case and Taylor	1.15	4.0	29	do	1.07	2.8
July 11	F. C. Ebert	1.08	1.0	Nov. 12	do	1.14	10
Aug. 4	E. W. Case	.98	.1	19	do	1.13	7.4
1914.				Dec. 3	do	1.16	9.2
May 10	F. C. Ebert		18	17	do	1.23	19
1915.				1916.			
June 11	W. J. Isbell	1.28	57	Jan. 8	W. J. Isbell	1.30	22
25	do	1.20	35	15	do	2.30	194
July 2	do	1.18	23	22	do	3.02	571
9	do	.95	19	Mar. 10	do	1.90	222
12	F. C. Ebert	.77	14	18	do	1.58	148
24	W. J. Isbell	.52	11	25	do	1.93	205
29	do	.52	9.1	31	do	1.54	142
Aug. 7	do	.37	5.9	Apr. 14	do	1.32	110
13	do	.35	5.4	28	do	.90	63
20	do	.30	5.1	May 12	do	.54	46
27	do	.37	5.6	26	do	.47	42
Sept. 3	do	.26	2.9	July 7	do	1.60	13
10	do	.23	3.2	Aug. 14	do	1.40	4.5
17	do	.29	6.1	Sept. 13	do	1.35	4.7
24	do	.22	4.1	Nov. 22	do	1.67	13

Daily discharge, in second-feet, of San Luis Rey near Nellie, Calif., for the year ending Sept. 30, 1916.

Day.	Oct.	Nov.	Dec.	Jan.	Apr.	May.	June.
1	2.5	4.0	8.0	25	132	58	24
2	2.5	4.0	8.5	43	136	59	32
3	3.0	4.0	9.0	41	132	58	31
4	3.0	6.0	52	26	136	56	31
5	3.0	7.0	38	38	133	54	30
6	3.0	12	16	48	125	53	30
7	3.5	16	12	29	119	52	28
8	3.5	11	12	22	112	51	28
9	3.5	10	11	140	112	48	27
10	4.0	19	11	55	112	47	26
11	4.0	14	12	58	120	46	26
12	4.5	8.5	13	59	135	45	24
13	4.5	7.0	14	60	115	44	23
14	5.0	7.0	31	63	108	46	22
15	5.0	7.0	48	194	106	44	21
16	5.0	7.0	22		100	40	20
17	5.0	7.0	19		96	42	19
18	4.5	7.0	18		94	40	18
19	4.5	8.0	15		92	45	17
20	4.0	8.5	13		91	58	17
21	4.0	11	13		83	49	17
22	4.0	11	14		82	44	18
23	3.5	12	15		78	39	18
24	3.5	13	16		74	42	17
25	3.5	12	13		72	41	16
26	3.0	12	13		66	41	15
27	3.0	11	12		69	37	15
28	3.0	10	13		69	38	15
29	3.0	8.0	17		62	35	14
30	3.0	8.0	31		62	33	14
31	3.0		33			34	

NOTE.—No gage-height record October 2–7 and 9–14, January 9 to March 31, April 10–12, 16, 18–19, 23, May 3–5, June 4–5, 8, 10, 12, 14–15, 17–19, 21–22, 24–26, 28–29; discharge interpolated.

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Monthly discharge of San Luis Rey River near Nellie, Calif., for the year ending Sept. 30, 1916.

[Drainage area, 240 square miles].

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
October	5.0	2.5	3.68	0.015	0.02	226
November	19	4.0	9.40	.039	.04	559
December	52	8.0	18.5	.077	.09	1,140
January	.....	22	2,680	11.2	12.91	165,000
April	136	62	101	.421	.47	6,010
May	59	33	45.8	.191	.22	2,820
June	34	14	22.1	.092	.10	1,320

SAN LUIS REY RIVER NEAR PALA, CALIF.

LOCATION.—In NW. ¼ sec. 31, T. 9 S., R. 1 W., above ford on road to Sickler's mill, about 4 miles southeast of Pala, San Diego County.

DRAINAGE AREA.—322 square miles (measured on topographic maps).

ELEVATION.—About 575 feet above sea level.

RECORDS AVAILABLE.—October 9, 1903, to June 30, 1911, and November 14, 1912, to January 31, 1916.

GAGE.—Friez water-stage recorder on left bank 600 feet above ford and staff gage in three sections at the same site. Previous to September 19, 1912, records were obtained from staff gage about 50 feet above ford. November 13, 1906, original gage datum was lowered 4.66 feet; new gage above cable is at an independent datum.

DISCHARGE MEASUREMENTS.—Made from cable 550 feet below water-stage recorder or by wading.

CHANNEL AND CONTROL—Bed composed of sand, gravel, and boulders; shifting. An artificial control, consisting of short concrete cut-off walls between boulders, was built across channel just below gage in September, 1912. It was rebuilt September 28, 1914. Zero flow for new control, about stage 5.7 feet. (See Pl. V, *A*, p. 16.)

EXTREMES OF DISCHARGE.—1903–1916: Maximum stage recorded, 18.1 feet January 27, 1916 (discharge, 75,000 second-feet); minimum stage recorded, 5.28 feet August 6 and 7, 1907 (discharge, 0.6 second-foot).

DIVERSIONS.—The Escondido Mutual Water Co. diverts water from San Luis Rey River about 10 miles above station. This water, which is stored at Escondido reservoir (capacity, 3,120 acre-feet), about 6 miles northeast of Escondido, is used for irrigation and municipal supply at Escondido and vicinity. There is a small diversion for irrigation on Rincon Indian Reservation. Water is diverted from Pauma Creek for irrigation on Pauma Indian Reservation and Pauma Rancho. About 1 second-foot of water is diverted above station for irrigation of orchard at Sickler's mill on left bank below station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; conditions much improved after construction of concrete control. Many rating curves, fairly well defined except for flood stage, have been used. Since installation of concrete control rating curves are better defined and are applicable for longer periods. Staff usually read to half-tenths once daily. Mean daily gage height determined by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating tables or by shifting-control method. Record good since construction of control; earlier records fair.

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Discharge measurements of San Luis Rey River near Pala, Calif., for 1903–1916.

[By W. V. Hardy, F. C. Ebert, and others.]

Date.	Gage height.	Discharge.
1903.	*Feet.*	*Sec.-ft.*
Aug. 16	.....	1.1
Oct. 9	1.72	1.1
1905.		
Feb. 8	2.25	108
17	2.72	188
18	4.75	735
Mar. 17	7.50	5,180
22	2.64	305
22	2.64	299
Apr. 11	1.80	104
May 15	1.20	49
17	1.10	40
20	1.40	57
July 6	.55	3.5
Aug. 8	.....	3.0
19	.....	3.2
26	.....	3.3
Sept. 2	.....	2.7
9	.....	2.7
16	.....	2.5
21	.....	2.1
23	.42	2.8
Oct. 28	.53	3.6
Dec. 27	.63	12.9
29	.61	9.4
1906.		
Jan. 11	.60	9.0
28	.18	14.7
Feb. 9	.13	10.4
26	.66	17.9
Mar. 4	1.02	38
4	1.10	43
5	1.20	48
6	1.00	38
7	.93	32
16	3.70	447
17	5.30	1,540
17	4.70	984
17	4.30	811
18	3.80	532
19	2.70	367
20	2.50	238
21	2.40	182
Apr. 12	2.20	307
26	1.52	119
May 14	1.18	166
June 27	.61	28
Aug. 5	.30	5.9
Oct. 10	.....	3.0
Nov. 13	a 5.27	3.5
Dec. 5	5.55	13
28	7.15	322
1907.		
Jan. 23	7.50	193
25	7.40	169
Feb. 13	6.43	78
15	6.40	76
19	6.62	110
20	6.57	105
Mar. 13	7.32	183
Mar. 14	7.18	141
27	7.95	593
Apr. 3	7.82	330
5	7.70	282
16	6.70	135
Apr. 18	6.65	123
May 6	6.39	105
8	6.30	82
23	5.93	46
June 5	5.82	32
18	5.70	17
July 24	5.40	3.0
Dec. 11	5.73	15
23	5.60	9.9
1908.	*Feet.*	*Sec.-ft.*
Jan. 7	5.62	12
20	5.61	12
31	6.40	73
Feb. 1	6.30	58
3	8.70	819
4	7.70	513
4	7.60	459
4	7.40	385
5	6.90	217
5	6.75	163
6	6.68	146
19	6.50	86
29	6.55	119
Mar. 8	6.42	87
16	6.07	39
27	6.40	90
Apr. 11	5.75	16
23	6.30	71
30	5.64	12
May 16	5.81	21
31	5.53	9.5
June 3	5.63	12
8	5.56	7.4
July 12	5.39	2.6
Nov. 5	5.55	5.8
28	5.50	5.3
Dec. 15	5.60	8.6
28	5.56	7.8
1909.		
Jan. 30	7.3	155
31	7.33	104
Feb. 11	7.9	272
11	8.2	389
11	8.5	545
12	8.77	617
12	8.62	575
12	9.1	900
12	9.48	1,131
13	9.1	909
13	8.85	796
15	8.0	438
Mar. 2	7.32	120
16	6.52	73
Apr. 1	7.27	182
2	7.2	167
13	6.55	87
May 1	6.13	44
June 4	5.63	7.7
1910.		
Jan. 8	7.55	164
Feb. 3	6.93	102
20	7.10	141
21	6.85	109
21	6.78	103
Mar. 8	6.40	43
9	6.37	42
29	7.30	177
Apr. 11	6.54	60
12	6.74	83
12	6.80	95
13	6.70	76
13	6.60	64
May 3	6.04	18
4	6.07	20
11	5.81	11
31	5.72	8.4
June 28	5.67	5.7
Sept. 20	5.62	3.9
Nov. 23	5.72	6.9
1911.		
Feb. 5	7.50	266
6	7.20	200
Mar. 6	7.20	161
Apr. 12	6.30	43
May 11	5.77	9.9
June 27	5.72	6.3

a New gage installed Nov. 13, 1906, the datum of which is 4.66 feet below that of the former gage.

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Discharge measurements of San Luis Rey River near Pala, Calif., for 1903–1916—Contd.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1911.			
Oct. 14	F. C. Ebert	5.70	5.8
1912.			
Jan. 21	F. C. Ebert	5.78	8.8
Feb. 12	do	5.75	7.0
13	do	5.77	7.5
Mar 7	F. C. Ebert	6.52	66
29	H. L. Davis	6.50	48
Apr. 2	F. C. Ebert	6.58	64
4	H. L. Davis	7.13	132
May 2	F. C. Ebert	6.33	38
22	do	6.08	18
June 15	H. L. Davis	5.83	7.4
25	E. W. Case	5.72	5.8
July 12	F. C. Ebert	5.72	3.3
Aug. 4	E. W. Case	5.71	3.4
17	F. C. Ebert	5.73	2.8
Sept. 10	do	5.67	3.4
11	do	5.67	3.1
12	do	5.68	3.4
14	do	5.68	3.6
15	do	5.66	3.2
16	do	5.66	3.1
17	do	5.67	3.1
18	do	5.68	3.4
20	do	5.60	3.4
Oct. 30	do	5.65	4.9
Nov. 14	do	5.69	5.3
Dec. 18	do	5.73	7.7
1913.			
Jan. 18	F.C.Ebert	6.05	28
19	do	6.00	24
Feb. 20	do	5.77	9.4
Mar. 15	E. W. Case	6.01	28
Apr. 18	H. D. McGlashan	5.86	15
May 9	F. C. Ebert	5.62	5.8
June 13	do	5.60	5.2
July 25	R. W. Day	5.44	1.9
Aug. 31	F. C. Ebert	5.59	2.2
Oct. 6	do	5.62	3.3
1914.			
Jan. 24	F. C. Ebert	5.81	11
30	do	6.50	121
Mar. 1	do	6.53	147
9	do	5.97	41
1914.			
Mar. 28	F. C. Ebert	6.25	77
Apr. 25	do	6.02	51
May 9	do	5.70	18
14	W. J. Isbell	5.68	16
28	do	5.60	7.6
June 19	do	5.48	4.0
July 10	do	5.48	3.6
24	do	5.38	1.8
Aug. 19	F. C. Ebert	5.34	1.1
Sept. 5	W. J. Isbell	5.46	2.5
9	F. C. Ebert	5.43	3.1
28	do	5.87	1.4
Oct. 14	W. J. Isbell	5.94	3.4
23	do	5.97	4.0
Nov. 6	do	5.96	3.8
Dec. 22	F. C. Ebert	6.04	7.3
1915.			
Jan. 11	Lee and Sleppy	6.00	6.4
23	F. C. Ebert	6.30	38
Feb. 2	do	7.85	644
13	do	7.82	648
27	do	7.08	276
Mar. 11	do	7.13	309
Mar. 26	do	6.70	116
Apr. 7	do	6.58	95
27	W. J. Isbell	6.58	174
May 6	W. D. McFadden	7.92	804
16	F. C. Ebert	7.07	285
21	do	7.00	240
July 9	W. J. Isbell	6.09	13
13	F. C. Ebert	6.01	12
24	W. J. Isbell	5.97	6.2
Aug. 2	F. C. Ebert	5.97	7.2
Sept. 17	W. J. Isbell	5.96	6.5
26	F. C. Ebert	5.97	7.1
Dec. 2	do	5.97	8.4
13	do	6.03	9.8
1916.			
Mar. 10	F. C. Ebert	.....	282
July 13	do	6.40	23
19	Leo and McClung	.....	19
Aug. 1	Isbell and McClung	.....	16
15	do	.....	12
Nov. 23	W. J. Isbell	.95	35

NOTE.—Beginning Sept. 20, 1912, measurements are referred to new gage above cable.

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Daily discharge, in second-feet, of San Luis Rey River near Pala, Calif., for 1906-1916.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906.												
1	.....	.....	.....	14	10	27	620	166	128	19	19	3
2	.....	.....	.....	12	10	27	490	155	128	19	19	3
3	.....	.....	.....	12	10	27	395	140	127	19	19	3
4	.....	.....	.....	12	10	38	380	140	126	19	19	3
5	.....	.....	.....	12	11	50	450	175	126	19	19	3
6	.....	.....	.....	12	12	38	520	170	118	19	19	3
7	.....	.....	.....	12	12	35	520	170	108	19	6	3
8	.....	.....	.....	12	12	22	535	155	105	19	7	3
9	.....	.....	.....	10	12	17	410	160	85	19	6	3
10	.....	.....	.....	10	12	20	410	165	78	19	6	3
11	.....	.....	.....	9	20	20	365	160	70	19	7	3
12	.....	.....	.....	9	16	1,300	300	235	56	19	6	3
13	.....	.....	.....	9	14	3,250	285	210	55	19	3	3
14	.....	.....	.....	12	14	430	285	175	54	19	3	3
15	.....	.....	.....	12	26	180	285	160	52	19	3	19
16	.....	.....	.....	12	241	260	260	150	50	19	3	8
17	.....	.....	.....	10	30	1,120	260	135	49	19	3	3
18	.....	.....	.....	10	35	460	235	125	48	19	43	3
19	.....	.....	.....	37	30	310	235	125	47	19	30	3
20	.....	.....	.....	232	25	240	205	115	46	19	26	3
21	.....	.....	.....	51	32	180	190	120	43	19	19	3
22	.....	.....	.....	31	35	220	180	105	40	19	7	3
23	.....	.....	.....	19	38	210	180	105	38	19	6	3
24	.....	.....	.....	12	35	13,000	160	100	35	19	6	3
25	.....	.....	.....	12	32	4,200	145	100	33	19	3	3
26	.....	.....	.....	12	17	4,800	123	160	30	19	3	3
27	.....	.....	.....	12	17	1,120	114	220	28	19	3	3
28	.....	.....	.....	11	32	990	167	260	25	19	3	3
29	.....	.....	.....	11	.....	820	173	220	22	19	3	3
30	.....	.....	.....	11	.....	470	160	170	19	19	3	3
31	.....	.....	.....	11	.....	810	.....	160	.....	19	3	.....
1906-7.												
1	3	3	20	200	410	88	162	92	40	7.6	1.0	1.8
2	3	3	20	163	178	85	410	87	33	6.8	1.4	1.8
3	3	3	17	151	178	85	370	87	33	6.0	1.4	2.0
4	3	3	17	151	170	106	281	81	33	6.0	1.0	2.0
5	3	3	17	175	162	2,100	281	87	33	6.0	.8	1.8
6	3	3	17	450	114	490	267	98	33	6.4	.6	2.0
7	3	3	14	313	106	490	243	92	33	6.0	.6	2.0
8	3	3	14	200	102	270	216	87	27	6.0	1.0	1.8
9	3	3	14	255	91	230	201	81	27	6.0	1.0	2.0
10	3	3	12	1,200	85	215	182	76	27	5.4	1.4	1.8
11	3	3	9	343	85	200	170	76	27	4.6	1.6	2.0
12	3	3	550	227	82	200	158	76	27	4.0	1.4	2.0
13	3	3	343	151	82	162	147	81	27	3.0	1.4	1.8
14	3	3	151	450	79	148	147	76	22	2.4	1.0	2.0
15	3	3	37	404	79	124	142	65	22	2.4	1.0	2.4
16	3	3	37	436	910	119	136	59	22	2.4	1.2	2.4
17	3	3	28	300	178	110	131	54	17	1.4	1.0	2.0
18	3	3	24	2,800	106	106	125	54	17	1.6	1.0	2.0
19	3	3	20	2,500	91	102	114	54	17	1.4	1.0	2.6
20	3	3	17	1,600	88	124	109	49	17	1.4	1.0	2.6
21	3	3	17	650	106	910	109	49	17	1.4	1.4	2.4
22	3	14	14	570	178	148	103	44	17	1.4	1.4	2.0
23	3	24	14	178	124	148	103	49	17	1.4	2.0	2.0
24	3	20	12	189	114	124	103	40	22	1.6	2.0	2.6
25	3	20	9	178	110	1,180	103	40	17	1.4	2.0	2.6
26	3	20	37	178	102	910	103	33	17	1.2	2.2	2.4
27	3	28	175	178	98	450	98	33	13	1.4	2.0	2.6
28	3	20	200	178	91	178	98	33	13	1.0	2.4	2.6
29	3	20	227	178	.....	178	98	33	10	1.0	2.4	4.5
30	3	20	175	1,000	.....	170	103	33	8	1.4	2.4	2.2
31	3	.....	200	820	.....	162	.....	40	.....	1.4	2.0	.....

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Daily discharge, in second-feet, of San Luis Rey River near Pala, Calif., for 1906-1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907-8.												
1	2.0	33	6.0	12	60	99	28	10	10	4	2	2
2	2.0	40	6.0	11	60	80	24	12	12	4	2	2
3	3.0	33	6.0	11	507	56	24	18	12	4	2	2
4	6.0	33	6.0	11	434	131	24	18	10	5	2	2
5	4.5	33	6.0	10	183	169	21	18	10	5	2	2
6	6.0	27	6.0	11	156	131	21	16	10	5	2	2
7	4.5	33	17	10	120	99	21	16	10	5	2	2
8	6.0	33	22	10	89	89	21	16	8	5	2	2
9	6.0	33	22	10	277	89	18	14	10	4	21	2
10	4.5	27	17	10	544	89	18	14	8	3	16	2
11	6.0	27	22	10	345	80	16	14	8	3	8	2
12	6.0	27	17	10	277	63	14	16	8	3	4	2
13	6.0	27	17	11	244	49	14	16	8	3	2	2
14	6.0	27	17	16	212	43	12	16	8	3	2	2
15	8.0	27	17	28	197	37	12	16	8	2	2	2
16	17	27	17	16	131	32	12	18	10	2	2	2
17	33	27	17	12	109	28	12	18	8	2	2	2
18	27	47	13	12	109	24	12	16	8	2	2	2
19	27	40	13	11	109	24	10	14	8	2	2	2
20	27	33	10	10	109	24	10	12	8	2	2	2
21	27	33	10	10	109	21	24	12	6	2	2	2
22	40	27	10	10	109	24	63	10	6	2	2	2
23	98	27	10	14	109	21	71	10	6	2	2	2
24	109	27	10	114	80	21	49	10	6	2	2	2
25	76	22	10	260	71	21	28	10	5	2	2	2
26	54	17	10	180	71	32	12	10	5	2	2	2
27	44	17	10	104	71	89	12	10	4	2	2	2
28	54	13	17	310	71	71	12	10	4	2	2	2
29	65	10	17	480	120	71	12	10	4	2	2	2
30	54	8.0	17	125	.....	56	12	10	4	2	2	2
31	44	.....	17	92	.....	32	.....	10	.....	2	2	.....
1908-9.												
1	2	5	5	8	110	130	182	44	7	6	5	5
2	2	5	5	7	115	120	167	44	7	6	5	5
3	2	5	8	8	135	107	143	42	7	6	5	5
4	2	5	18	7	315	103	135	41	8	5	5	5
5	2	6	12	7	200	100	128	41	7	5	5	5
6	2	6	12	7	120	90	122	40	7	5	5	5
7	2	6	10	7	230	83	122	38	7	5	5	5
8	2	6	9	7	455	73	115	37	7	5	5	5
9	2	6	9	7	240	70	115	34	7	6	6	5
10	2	6	9	10	195	67	110	33	6	6	5	5
11	2	6	9	8	390	70	100	31	6	6	5	5
12	2	6	9	12	790	70	94	30	6	6	5	5
13	2	6	9	50	930	68	87	29	6	6	5	5
14	2	7	9	85	400	70	85	28	6	6	5	5
15	2	7	9	40	438	70	85	30	6	6	5	5
16	3	6	10	20	430	73	80	30	7	6	5	5
17	5	7	12	15	400	73	80	30	7	5	5	5
18	5	7	10	90	340	73	80	28	7	5	5	5
19	5	7	7	12	270	76	75	25	6	5	5	5
20	5	7	6	12	240	77	70	22	6	5	5	5
21	5	7	6	95	760	88	70	22	5	5	5	5
22	5	7	6	[a]3,240	475	225	70	24	6	5	5	5
23	5	7	6	450	325	225	65	21	6	5	5	5
24	4	6	7	205	285	165	60	20	6	5	5	5
25	5	6	7	230	235	120	55	19	6	5	5	5
26	5	6	7	255	175	150	50	17	5	5	6	5
27	5	6	8	450	150	425	50	15	5	5	6	5
28	5	5	8	310	140	425	46	13	5	5	5	5
29	5	5	8	230	.....	315	45	11	5	5	5	5
30	5	5	8	155	.....	245	45	8	5	5	6	5
31	5	.....	8	105	.....	210	.....	8	.....	5	6	.....

[a] Maximum discharge Jan. 22, 1909, 4,600 second-feet.

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Daily discharge, in second-feet, of San Luis Rey River near Pala, Calif., for 1906-1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10.												
1	5	5	13	3,770	100	79	82	20	6.3	.....	.....	.....
2	5	5	13	1,200	85	79	79	20	6	.....	.....	.....
3	5	5	13	485	78	60	79	18	6	.....	.....	.....
4	5	5	13	205	77	69	79	15	6	.....	.....	.....
5	5	5	30	200	75	60	79	12	5.6	.....	.....	.....
6	5	5	35	192	71	66	76	14	5.8	.....	.....	.....
7	5	5	30	195	67	62	69	12	7.2	.....	.....	.....
8	5	5	25	192	63	58	66	11	5.4	.....	.....	.....
9	5	5	235	192	60	54	64	10	5.2	.....	.....	.....
10	5	5	225	192	56	50	60	9	5.0	.....	.....	.....
11	5	15	190	225	52	45	59	9.3	4.8	.....	.....	.....
12	5	18	150	205	49	41	89	9.3	5.2	.....	.....	.....
13	5	13	120	192	45	37	72	9	5.2	.....	.....	.....
14	5	20	115	180	41	45	59	9	5.2	.....	.....	.....
15	5	23	95	200	47	42	55	9	5.2	.....	.....	.....
16	5	23	35	695	52	39	52	9	5.2	.....	.....	.....
17	5	23	25	580	58	44	49	8.7	5.2	.....	.....	.....
18	5	20	30	560	63	66	44	8.7	5.2	.....	.....	.....
19	5	18	35	485	69	52	39	8.4	5.2	.....	.....	.....
20	5	15	35	462	75	40	40	8.1	5.2	.....	.....	.....
21	5	15	350	422	76	35	32	8.1	5.4	.....	.....	.....
22	5	11	225	375	73	46	28	7.8	5.4	.....	.....	.....
23	5	11	190	320	69	51	25	7.8	5.4	.....	.....	.....
24	5	11	175	308	66	56	26	7.5	5.4	.....	.....	.....
25	5	11	150	272	76	61	22	7.5	5.4	.....	.....	.....
26	5	15	130	236	74	66	23	7.2	5.4	.....	.....	.....
27	5	15	120	205	72	90	22	7.2	5.4	.....	.....	.....
28	5	15	115	200	79	259	22	6.9	5.4	.....	.....	.....
29	5	13	115	155	.....	191	22	6.9	5.4	.....	.....	.....
30	5	13	115	139	.....	145	21	6.6	5.4	.....	.....	.....
31	5	.....	160	119	.....	101	.....	6.6	.....	.....	.....	.....

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Daily discharge, in second-feet, of San Luis Rey River near Pala, Calif., for 1906–1916—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1910–11.							1910–11.						
1	5	29	146	80	18	10	16	45	181	135	37	12	5.4
2	5	49	138	300	15	11	17	30	170	130	35	12	4.8
3	5	72	200	150	14	9.6	18	20	160	125	33	12	4.5
4	5	1,130	778	100	16	10	19	10	160	120	30	9.2	5.1
5	5	308	262	90	14	10	20	10	150	115	30	6.4	5.4
6	5	200	161	90	14	9.6	21	10	140	110	33	5.7	5.4
7	5	140	140	170	14	7.2	22	10	170	110	33	6.8	6
8	5	100	140	280	14	7.2	23	10	510	105	32	8.0	5.4
9	5	75	160	160	13	6	24	10	280	105	29	8.0	6
10	158	65	350	100	13	6.4	25	10	170	100	28	8.0	6
11	274	60	805	65	12	6.8	26	140	145	95	98	8.4	6
12	375	70	400	43	12	5.7	27	60	146	90	74	8.4	6
13	150	80	161	43	12	6	28	30	216	90	63	7.6	6.8
14	30	210	150	38	14	6.4	29	30	.....	85	21	8.8	6.4
15	45	200	140	35	14	5.4	30	25	.....	85	20	9.2	6
							31	25	.....	80	.....	10	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	.....	.....	9	9	11	31	11	9	4	3	3	2
2	.....	.....	9	9	11	28	11	8	4	3	3	2
3	.....	.....	9	9	11	24	11	8	4	3	3	2
4	.....	.....	9	9	11	17	11	7	4	3	3	2
5	.....	.....	9	9	11	17	14	7	4	3	3	2
6	.....	.....	9	10	11	17	14	7	4	3	3	2
7	.....	.....	6	11	14	17	14	7	4	3	3	2
8	.....	.....	6	12	17	17	14	7	4	3	3	2
9	.....	.....	6	13	17	20	11	5	4	3	3	2
10	.....	.....	6	14	16	24	9	5	4	3	3	2
11	.....	.....	9	14	15	28	9	5	4	3	3	2
12	.....	.....	9	14	14	36	9	5	5	3	3	2
13	.....	.....	9	14	12	46	9	5	5	3	3	2
14	.....	6	9	14	11	36	9	5	5	3	3	2
15	.....	6	9	86	10	24	9	5	5	3	3	2
16	.....	6	9	86	9	20	9	5	5	3	3	2
17	.....	6	9	60	9	17	9	5	4	3	3	2
18	.....	6	9	28	9	14	14	5	4	3	3	2
19	.....	6	9	24	9	14	17	5	4	3	3	2
20	.....	6	9	14	9	14	11	5	5	3	3	3
21	.....	6	9	14	14	11	9	5	5	3	3	3
22	.....	6	9	11	86	14	9	5	3	2	3	3
23	.....	5	9	11	46	14	6	5	3	2	3	3
24	.....	5	9	11	28	28	6	5	3	2	3	3
25	.....	6	9	11	32	41	6	5	3	2	3	3
26	.....	6	9	11	36	17	6	5	3	3	3	3
27	.....	6	9	9	36	14	6	5	3	3	3	3
28	.....	6	9	9	33	14	6	5	3	3	3	3
29	.....	9	9	9	.....	11	6	5	3	3	3	3
30	5	9	9	9	.....	11	9	4	3	3	3	5
31	.....	.....	9	9	.....	11	.....	4	.....	3	3	.....

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Daily discharge, in second-feet, of San Luis Rey River near Pala, Calif., for 1906–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	5	2	4	10	72	136	75	47	7	4	4	1
2	3	2	3	10	64	124	40	35	7	4	4	1
3	3	2	3	10	58	93	31	26	7	4	4	1
4	3	2	4	10	44	80	32	22	7	4	4	2
5	3	2	4	10	40	57	39	20	7	4	4	2
6	3	2	5	10	40	47	46	20	6	4	3	2
7	3	2	5	10	40	44	44	20	6	4	3	3
8	3	2	5	10	40	44	42	19	6	4	3	3
9	3	2	5	10	40	43	39	18	6	4	3	3
10	3	2	5	12	40	47	39	18	6	4	3	2
11	3	2	5	10	40	47	39	17	5	4	2	1
12	3	2	5	9	40	40	38	17	5	4	2	1
13	3	2	5	9	40	34	36	16	5	4	2	1
14	3	2	5	10	40	30	34	16	5	3	2	1
15	4	2	6	11	40	28	33	15	5	3	1	1
16	4	2	6	30	40	29	33	15	4	3	1	1
17	3	4	6	15	40	30	33	14	4	3	1	1
18	3	5	6	26	55	29	33	14	4	3	1	1
19	3	5	6	23	714	28	33	13	4	3	1	1
20	3	6	6	18	820	28	33	13	4	3	1	1
21	3	7	6	16	2,910	28	33	12	4	2	1	1
22	3	7	8	14	840	28	82	11	4	2	1	2
23	2	7	10	13	515	28	93	11	4	2	1	2
24	2	7	10	13	355	28	51	10	4	2	1	3
25	2	7	10	29	280	28	46	10	4	2	1	2
26	2	7	9	470	212	28	35	9	4	2	1	1
27	2	7	9	1,190	154	30	31	9	4	2	1	1
28	2	7	9	540	148	71	30	8	4	2	1	1
29	2	6	7	280	.....	100	32	8	4	2	1	1
30	2	5	9	146	.....	184	35	8	4	30	1	1
31	2	.....	10	110	.....	117	.....	8	.....	5	1	.....
1914–15.												
1	3	5	9.5	6.5	475	289	134	660	158	13	7	6.5
2	4	4.5	10	6.5	1,290	379	118	790	151	13	7	7
3	5	4.5	6	6.5	525	690	103	660	141	13	7	8
4	5	4.5	6	6.5	311	500	103	602	134	13	7	8
5	5	4.5	6	6.5	247	451	98	975	125	13	6.5	7
6	4.5	4.5	8	6.5	207	451	100	722	112	13	6.5	6
7	4	4.5	8	6	161	403	98	602	103	13	6.5	6
8	3.5	4.5	8.5	6	66	356	87	575	95	13	6	6
9	3.5	6	8.5	6	207	333	73	550	85	13	6.5	6
10	3	6	8.5	6	1,760	356	69	525	77	13	6.5	6
11	3	6	8.5	6	3,300	289	66	475	77	12	6.5	6
12	3	7.5	8.5	6	1,760	268	64	451	77	12	6.5	6
13	3	7.5	9	6	790	247	64	403	77	12	6.5	6
14	3.5	6	9	6	500	247	66	333	66	12	6.5	6.5
15	3.5	4.5	9	6	427	227	77	289	66	10	6.5	6.5
16	3.5	4.5	9	6	333	207	90	289	56	7	6	6.5
17	4	5	9.5	6	289	188	73	268	47	6	6.5	6.5
18	4	5	13	6	227	184	71	311	38	6	6.5	6.5
19	4	5	10	6	215	176	66	289	38	6	6.5	6.5
20	4.5	5	8	6	311	168	60	268	38	6.5	7	6.5
21	4.5	5	8	8	500	168	98	247	38	7	7	6.5
22	5	5	9	38	427	161	550	239	38	7	6	7
23	5	5	9	42	356	154	333	219	30	7	6.5	7
24	5	5	8	15	311	144	289	125	30	7	6.5	7
25	5	5	8	20	289	141	247	211	30	7	9	7
26	4.5	5.5	7.5	28	289	134	223	207	23	7	14	7
27	4.5	5.5	7.5	16	289	134	176	203	23	7	10	6.5
28	4.5	6	7.5	16	289	151	176	195	21	7	9	6
29	5	6	7.5	975	.....	168	207	191	18	7	7	5.5
30	5	6	7.5	1,560	.....	151	356	180	15	7	5	5.5
31	5	.....	7.5	660	.....	134	.....	168	.....	7	6.5	.....

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Daily discharge, in second-feet, of San Luis Rey River near Pala, Calif., for 1906–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Day.	Oct.	Nov.	Dec.	Jan.
1915–16.					1915–16.				
1	5.5	6	8	18	16	5.5	7	31	1,660
2	5	6	8.5	18	17	5.5	7	16	.....
3	5	6	8.5	27	18	5.5	7	8.5	.....
4	5	6	16	18	19	6	7.5	8.5	.....
5	5	6.5	36	18	20	6	7.5	7.5	.....
6	5	7	20	26	21	6	7.5	7.5	.....
7	5	7.5	14	25	22	6	7.5	7.5	.....
8	4.5	7.5	12	18	23	6.5	7.5	7	.....
9	4.5	7.5	11	34	24	6.5	7.5	7	.....
10	4.5	10	9	119	25	6.5	7.5	7	.....
11	5	9.5	11	289	26	6.5	7.5	7	.....
12	5.5	9.5	11	161	27	6.5	8.	7	.....
13	5.5	9	11	99	28	6	8	7.5	.....
14	5.5	8	16	92	29	6	8	9	.....
15	5.5	7	35	311	30	6	8	25	.....
					31	6	.....	24	.....

NOTE.—Daily discharge determined as follows: 1907, from rating curves covering short periods.

1908, by shifting-control method.

1909–10: Jan. 1 to Feb. 13, 1910, from fairly well defined curves.

1910–11: Feb. 14 to June 30, Jan. 1 to Feb. 3, 1911, Feb. 5 to Mar. 4, Mar. 5 to June 30, from fairly well define rating curves; no record July to December in 1910 and 1911.

Discharge interpolated for days on which gage was not read in January to June, 1910. Discharge estimated from hydrographs of neighboring streams for days on which gage was not read in January to June, 1911. Since installation of concrete control in September, 1912, discharge has been computed from rating curves well defined except for high water. Recording gage not in operation May 9, to September 30, 1914, discharge estimated by interpolation between measurements and by comparison of flow near Mesa Grande.

1914–15: Oct. 1, 1914, to July 8, 1915 and July 13 to Sept. 30 computed from two rating curves well defined below 1,000 second-feet; high-water extension of rating curve determined from study of record of flow on San Luis Rey River near Mesa Grande and high-water curve for 1910.

1915–16: Oct. 1, 1915, to Jan. 16, 1916, from two fairly well defined rating curves. No gage record after Jan. 16, 1916, discharge estimated from mean rainfall computed for drainage area and compared with records of flow at stations on San Luis Rey River near Mesa Grande and Oceanside.

Monthly discharge of San Luis Rey River near Pala, Calif., for 1903–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet.)	Month.	Discharge in second-feet.			Run-off (total in acre-feet.)
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1903–4.					**1905–6.**				
October (23 days)	1.5	1	1.1	50	October	3.8	2.8	3.2	197
November	1.5	1	1.4	83	November	96	3.8	17.8	1,059
December	1.5	1	1.2	74	December	47	10	18.3	1,125
January	1.5	1.5	1.5	92	January	232	9	21.4	1,320
February	2.5	1.5	2	115	February	241	10	28.6	1,590
March	348	1.5	41.6	2,558	March	13,000	17	1,120	68,900
April	104	20	43.6	2,595	April	620	114	301	17,900
May	35	12	16.2	996	May	260	100	158	9,720
June	12	9	10.8	643	June	128	19	65.6	3,900
July	9	3	3.8	234	July	19	19	19	1,170
August	2	2	2	123	August	43	3	10.3	633
September	2	2	2	119	September	19	3	3.7	220
The period	.....	.....	.....	7,680	The year	13,000	2.8	147	108,000
1904–5.					**1906–7.**				
October	13	2	2.5	154	October	3	3	3	184
November	3	2	2.4	143	November	28	3	8.3	494
December	5.5	2	3.7	227	December	550	9	79.3	4,880
January	66	3	19.1	1,174	January	2,800	151	541	33,300
February	711	13	151	8,386	February	910	79	154	8,550
March	4,265	2	336	20,660	March	2,100	85	326	20,000
April	139	27	64.9	3,862	April	410	98	167	9,940
May	282	27	88.1	5,417	May	98	33	62.5	3,840
June	35	11	23	1,369	June	40	8	22.8	1,360
July	9	3	4.1	252	July	7.6	1	3.27	201
August	3.5	3	3.0	184	August	2.4	.6	1.42	87
September	3	2.5	2.6	155	September	4.5	1.8	2.22	132
The year	4,265	2	58.4	42,000	The year	2,800	.6	114	83,000

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Monthly discharge of San Luis Rey River near Pala, Calif., for 1903–1916—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet.)
	Maximum.	Minimum.	Mean.	
1907–8.				
October	109	2	28.1	1,730
November	47	8	27.8	1,650
December	22	6	13.3	818
January	480	10	62.6	3,850
February	544	60	175	10,100
March	169	21	61.1	3,760
April	71	10	21.3	1,270
May	18	10	13.2	812
June	12	4	7.4	440
July	5	2	3.0	184
August	21	2	3.4	209
September	2	2	2.0	119
The year	544	2	34.8	24,900
1908–9.				
October	5	2	3.5	215
November	7	5	6.1	363
December	12	5	8.6	529
January	3,240	7	198	12,200
February	930	110	332	18,400
March	425	67	137	8,420
April	182	45	91.0	5,410
May	44	8	27.6	1,700
June	8	5	6.23	371
July	6	5	5.35	329
August	6	5	5.13	315
September	5	5	5.00	298
The year	3,240	2	68.8	48,600
1909–10.				
October	5	5	5.00	307
November	23	5	12.4	738
December	350	13	107	6,580
January	3,770	119	431	26,500
February	100	41	66.7	3,700
March	259	35	70.6	4,340
April	89	21	51.1	3,040
May	20	6.6	9.99	614
June	7.2	4.8	5.47	325
The period	.....	.....	.....	46,100
1911.				
January	375	5	50.1	3,080
February	1,130	29	192	10,700
March	805	80	187	11,500
April	300	20	78.0	4,640
May	18	5.7	11.3	695
June	11	4.5	6.75	402
The period	.....	.....	.....	31,000
1912–13.				
November	9	6	6.2	209
December	9	6	8.6	529
January	86	9	18.5	1,140
February	86	9	19.6	1,000
March	46	11	20.9	1,290
April	17	6	9.8	583
May	9	4	5.6	344
June	5	3	3.9	232
July	3	2	2.9	178
August	3	3	3.0	184
September	5	2	2.4	143
The period	86	2	9.2	5,920
1913–14.				
October	5	2	2.8	172
November	7	2	4.0	238
December	10	3	6.3	387
January	1,190	9	99.5	6,120
February	2,910	40	277	15,400
March	184	28	55.1	3,390
April	83	30	41.3	2,460
May	47	8	16.1	990
June	7	4	5.0	298
July	30	2	4.1	252
August	4	1	1.9	117
September	3	1	1.5	89
The year	2,910	1	41.3	29,900
1914–15.				
October	5	3	4.18	257
November	7.5	4.5	5.28	314
December	13	6	8.37	515
January	1,560	6	113	6,950
February	3,300	66	577	32,000
March	690	134	260	16,000
April	550	60	144	8,570
May	975	168	397	24,400
June	158	15	67.6	4,020
July	13	6	9.56	588
August	14	5	7.03	432
September	8	5.5	6.50	387
The year	3,300	3	130	94,400
1915–16.				
October	6.5	4.5	5.58	343
November	10	6	7.53	448
December	36	7	13.4	824
January	.....	18	3,270	201,000
The period	.....	.....	.....	203,000

SAN LUIS REY RIVER AT PALA, CALIF.

LOCATION.—In NW. ¼ SE. ¼ sec. 26, T. 9 S., R. 2 W., at highway bridge on Escondido-Pala road at Pala, San Diego County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 400 feet above sea level.

RECORDS AVAILABLE.—April 1 to June 17, 1912.

GAGE.—Painted on right wing wall just above bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Sand; shifting.

DIVERSIONS.—See San Luis Rey near Pala (p. 182). In addition Pala Indian Reservation canal, on left bank San Luis Rey River, diverts water three-fourths mile above bridge for irrigation. The intake of Morena ditch is on right bank one-fourth mile below bridge.

REGULATION.—None.

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ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths once daily. Daily discharge computed from two rating curves covering short periods and by shifting-control method. Records fair.

Discharge measurements of San Luis Rey River at Pala, Calif., for 1912.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 28	H. L. Davis	(a)	64	May 14	E. W. Case	3.00	29
Apr. 2	F. C. Ebert	2.92	61	June 15	H. L. Davis	2.80	.5
20	H. L. Davis	3.45	126				

a Not referred to gage.

NOTE.—Measurements made by wading near gage.

Daily discharge, in second-feet, of San Luis Rey River at Pala, Calif., for 1912.

Day.	April.	May.	June.	Day.	April.	May.	June.	Day.	April.	May.	June.
1	78	50	0.5	11	205	97	.5	21	97	12	.....
2	58	48	.5	12	168	79	.5	22	90	10	.....
3	53	29	.5	13	133	48	.5	23	83	6.2	.....
4	48	20	.5	14	154	29	.5	24	68	6.2	.....
5	50	12	.5	15	147	20	.5	25	62	.5	.....
6	46	12	1.6	16	183	0.5	1.0	26	62	.5	.....
7	29	12	.5	17	184	12	1.6	27	60	.5	.....
8	29	127	.5	18	163	24	.....	28	58	.5	.....
9	35	200	.5	19	143	24	.....	29	58	.5	.....
10	46	140	.5	20	114	24	.....	30	52	.5	.....
								31	.....	.5	.....

NOTE.—Daily discharge determined from rating curves applicable as follows: Apr. 1-10, 1912, poorly defined; Apr. 20 to June 17, 1912, fairly well defined. Shifting-control method used Apr. 11-19.

Monthly discharge of San Luis Rey River at Pala, Calif., for 1912.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
April	205	29	91.9	5,470
May	200	.5	33.7	2,070
June 1-17	1.6	.5	.66	22.3

SAN LUIS REY RIVER AT BONSALL, CALIF.

LOCATION.—In SW. ¼ sec. 20, T. 10 S., R. 3 W., at concrete highway bridge at Bonsall, San Diego County, just above Moosa Canyon, 14 miles below gaging station near Pala, and 14 miles above mouth of river.

DRAINAGE AREA.—465 square miles (measured on topographic maps).

ELEVATION.—About 150 feet above sea level.

RECORDS AVAILABLE.—April 16, 1912, to January 31, 1916.

GAGE.—Staff in three sections on left bank at bridge, in use January 23 to March 25, 1915, and October 1, 1915, to January 15, 1916. Gage previously used was in three sections on right bank 150 feet below bridge. Original datum has not been maintained.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Sand; somewhat shifting.

EXTREMES OF DISCHARGE.—1912-1915: Maximum stage, 7.0 feet February 11, 1915 (discharge, 9,000 second-feet); maximum stage for 1916 not known, as all equipment was destroyed by the flood of January, 1916. No flow for several months each year.

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DIVERSIONS.—See San Luis Rey River near Pala (p. 182). In addition, Morena ditch and Pala Indian Reservation canal divert water in the vicinity of Pala for irrigation. Water for irrigation is also pumped from wells along the river.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating tables fairly well defined except for flood stages. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables covering short periods, by shifting-control method, or interpolated between discharge measurements for periods when the change in stage was slight. Records fair.

Discharge measurements of San Luis Rey River at Bonsall, Calif., for 1912–1916.

Date.	Made by—	Left bank gage.	Gage height.	Discharge.	Date.	Made by—	Left bank gage.	Gage height.	Discharge
		Feet.	*Feet.*	*Sec.-ft.*			*Feet.*	*Feet.*	*Sec.-ft.*
1912.					1914.				
Apr. 16	F. C. Ebert		1.88	219	Dec. 14	F. C. Ebert	1.76	1.02	2.3
19	H. L. Davis		1.93	174	22	do	1.96	1.02	10
May 3	F. C. Ebert		1.61	48	1915.				
14	E. W. Case		1.60	44	Jan. 10	Lee and Sleppy		1.02	12
22	F. C. Ebert		1.53	16	23	F. C. Ebert	2.07	1.25	65
June 15	E. W. Case		1.29	.3	24	do	1.88	1.08	33
Dec. 19	F. C. Ebert		1.40	3.2	25	do	1.91	1.22	38
1913.					Feb. 1	K. B. Sleppy		1.48	571
Jan. 16	F. C. Ebert		1.75	97	5	do	2.55	1.71	268
17	do		1.63	62	11	F. C. Ebert	4.28	3.30	3,230
19	do		1.45	25	12	do	3.65	2.48	2,220
24	do		1.35	9.1	13	do	2.90	1.84	790
25	do		1.39	11	14	do	2.65	1.76	616
Feb. 14	do		1.42	12	27	do	2.40	1.43	304
20	do		1.40	9.8	Mar. 1	do	2.45	1.50	602
21	do		1.43	15	2	do	3.20	2.20	1,380
22	do		1.60	41	11	do	2.43	1.61	312
Mar. 12	do		1.40	31	26	do	2.24	1.53	123
15	Case and McFadden		1.51	28	Apr. 7	do	2.24	1.48	101
21	F. C. Ebert		1.44	21	17	D. L. Lee		1.46	71
Apr. 8	do		1.39	12	27	W. J. Isbell		1.58	132
19	H. D. McGlashan		1.35	9.6	May 6	W. D. McFadden		2.06	943
May 9	F. C. Ebert		1.20	.3	16	F. C. Ebert	2.54	1.78	237
June 13	do		1.13	[a] .2	21	do	2.41	1.73	232
1914.					July 6	W. E. Keenan	1.82	1.23	8.0
Jan. 17	F. C. Ebert		1.31	7.3	13	F. C. Ebert			.7
24	do		1.34	16	Aug. 2	do			[b] .0
31	do		1.25	147	Dec. 2	do		1.94	8.7
Feb. 4	do		.97	51	13	do		1.96	15
Mar. 1	do		1.26	200	22	H. D. McGlashan		1.94	17
10	do		1.12	64	1916.				
28	do		1.02	44	Jan. 13	McFadden and Ireland		2.18	77
Apr. 18	do		.97	12	Feb. 6	G. S. Strout			955
25	do		1.10	43					
May 9	do		1.01	20					
14	do		.95	10					

[a] Estimated. [b] Stream dry.

Daily discharge, in second-feet, of San Luis Rey River at Bonsall, Calif., for 1912–1916.

Day.	Apr.	May.	June.	Day.	Apr.	May.	June.	Day.	Apr.	May.	June.
1912.				1912.				1912.			
1		58	1.8	11		109	1.0	21	126	14	0.0
2		19	1.8	12		58	1.0	22	109	14	.0
3		27	1.8	13		40	1.0	23	70	12	.0
4		14	1.0	14		40	1.0	24	70	5.0	.0
5		14	1.0	15		58	1.0	25	70	5.0	.0
6		14	1.0	16	202	47	1.0	26	47	5.0	.0
7		14	.6	17	218	14	1.0	27	77	5.0	.0
8		77	.0	18	228	14	.0	28	35	3.0	.0
9		170	1.0	19	151	14	.0	29	27	3.0	.0
10		160	1.0	20	117	14	.0	30	70	1.8	.0
								31		1.0	

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Daily discharge, in second-feet, of San Luis Rey River at Bonsall, Calif., for 1912–1916—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1				3	14	157	14	0.3	0.3			
2				8	10	140	14	.3	.3			
3				8	14	40	14	.3	.3			
4				8	10	33	14	.1	.2			
5				3	14	36	14	.1	.2			
6				14	14	39	14	.2	.2			
7				14	30	30	14	.3	.2			
8				14	42	23	14	.3	.2			
9				14	53	25	14	.3	.2			
10				27	32	27	14	.3	.2			
11				14	16	22	14	.3	.2			
12			3	27	10	23	13	.3	.1			
13			3	27	10	17	13	.3	.1			
14			3	27	10	16	12	.3	.1			
15			3	14	10	14	12	.3				
16			3	77	6	22	11	.3				
17			3	53	10	22	11	.3				
18			3	53	10	22	10	.3				
19			3	30	10	22	10	.3				
20			3	30	10	14	9	.3				
21			3	14	16	22	9	.3				
22			1	14	105	22	8	.3				
23			3	14	70	22	8	.3				
24			3	14	56	22	7	.3				
25			3	14	70	53	6	.3				
26			3	14	195	53	5	.3				
27			3	14	150	53	4	.3				
28			3	10	154	53	3	.3				
29			3	14		30	2	.3				
30			3	14		30	1	.2				
31			3	14		14		.2				
1913–14.												
1			1	5	128	200	81	29	4			
2			1	4	92	210	62	29	4			
3			1	5	76	200	41	40	4			
4			1	4	51	190	44	40	1			
5			2	4	46	180	43	40	1			
6			2	4	46	135	41	106	1			
7			2	4	46	125	40	70	4			
8			4	4	46	115	39	70	4			
9			4	4	46	100	38	12	1			
10			4	4	33	64	36	12	1			
11			4	5	33	64	35	12	1			
12			4	5	33	64	32	6	1			
13			4	4	33	64	28	6	1			
14			4	4	33	64	25	12	1			
15			4	5	33	64	22	12	1			
16			4	7	33	64	19	6	1			
17			4	7	33	49	15	6	1			
18			4	15	33	34	12	6	1			
19			5	30	510	34	6	6	1			
20			5	25	990	34	0	6	1			
21			5	20	2,820	34	0	6	1			
22			5	16		34	18	6	1			
23			7	16		34	55	6	1			
24			7	16		34	40	6	1			
25			5	27		34	55	6	1			
26			5	380		34	40	6				
27			5	1,530		34	29	6				
28			5	455	210	44	29	6				
29			5	245		121	29	6				
30			5	166		120	40	4				
31			5	147		137		1				

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Daily discharge, in second-feet, of San Luis Rey River at Bonsall, Calif., for 1912–1916—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	.....	.....	1.5	11	571	602	120	610	142	28	0.4	.....
2	.....	.....	1.5	11	1,100	1,020	98	900	142	14	.4	.....
3	.....	.....	1.5	11	1,920	440	80	620	142	14	.4	.....
4	.....	.....	1.5	12	136	725	80	515	142	14	.4	.....
5	.....	.....	1.5	12	312	440	80	2,050	142	14	.4	.....
6	.....	.....	1.5	12	195	388	80	1,010	120	14	.4	.....
7	.....	.....	1.5	12	163	388	80	715	120	12	.3	.....
8	.....	.....	1.5	12	136	388	62	680	120	10	.3	.....
9	.....	.....	1.5	12	1,500	440	62	450	120	8	.3	.....
10	.....	.....	1.5	12	5,130	440	62	415	98	6	.3	.....
11	.....	.....	1.5	12	7,000	341	62	500	80	4	3	.....
12	.....	.....	20	12	1,680	326	80	415	80	2	.3	.....
13	.....	.....	10	12	1,020	311	80	380	80	.7	.2	.....
14	.....	.....	2.5	12	609	296	98	320	80	.7	.2	.....
15	.....	1	3	12	492	282	98	220	62	.7	.2	.....
16	.....	1	4	12	341	267	98	232	62	.7	.2	.....
17	.....	1	5	12	300	252	98	232	45	.7	.2	.....
18	.....	1	6	12	162	238	80	310	45	.7	.2	.....
19	.....	1	7	12	113	223	80	232	45	.6	.1	.....
20	.....	1	8	12	162	208	80	232	45	.6	.1	.....
21	.....	1	9	12	440	194	120	198	45	.6	.1	.....
22	.....	1	10	43	341	179	600	198	45	.6	.1	.....
23	.....	1	10	65	224	164	232	198	45	.6	.1	.....
24	.....	1	10	38	224	150	198	198	45	.6	.1	.....
25	.....	1	10	38	1,340	135	142	198	28	.6	.05	.....
26	.....	1	10	38	300	120	142	198	28	.5	.05	.....
27	.....	1	10	38	224	98	142	170	28	.5	.05	.....
28	.....	1	10	38	162	98	142	170	28	.5	.05	.....
29	.....	1	11	3,150	.....	170	200	170	28	.5	.05	.....
30	.....	1	11	3,730	.....	120	400	142	28	.5	.05	.....
31	.....	.....	11	793	.....	120	.....	142	.....	.5	.05	.....

Day.	Nov.	Dec.	Jan.	Day.	Nov.	Dec.	Jan.	Day.	Nov.	Dec.	Jan.
1915–16.				**1915–16.**				**1915–16.**			
1	0	4	57	11	4	11	320	21	1	18	.....
2	0	11	57	12	4	11	162	22	1	18	.....
3	0	11	57	13	4	11	86	23	1	18	.....
4	0	34	57	14	1	22	86	24	1	18	.....
5	0	50	42	15	1	22	268	25	1	18	.....
6	0	34	42	16	1	42	.....	26	1	18	.....
7	1	22	57	17	1	42	.....	27	1	29	.....
8	1	22	57	18	1	29	.....	28	4	29	.....
9	1	11	57	19	1	29	.....	29	4	29	.....
10	11	11	95	20	1	18	.....	30	4	143	.....
								31	.....	95	.....

NOTE.—Daily discharge determined as follows: 1912: Apr. 16–18, by shifting-control method; Apr. 19 to June 17, from a fairly well defined rating curve.

1912–13: Dec. 11, 1912 to Apr. 9, 1913 and May 1 to June 14, 1913, from fairly well defined rating curves covering short periods; Apr. 10–30, by shifting-control method.

1913–14: Dec. 1, 1913 to June 25, 1914, from poorly defined rating curves covering short periods and by shifting-control method.

1914–15 Nov. 15, 1914, to Aug. 30, 1915, from fairly well defined rating curves covering short periods and by shifting-control method (new gage on right bank used Jan. 23 to Mar. 25).

1915–16: Oct. 1 to Nov. 6 practically dry; Nov. 7–15 and Dec. 16, 1915, to Jan. 15, 1916, read from two fairly well defined rating curves. No gage-height record after Jan. 16, 1916; discharge estimated from mean rainfall record computed for drainage area and compared with records of flow at stations on San Luis Rey River near Mesa Grande and Oceanside.

No estimates of discharge Nov. 20 and 21, 1913 and Feb. 22–28, 1914; Otherwise stream dry on days when no discharge is given.

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Monthly discharge of San Luis Rey River at Bonsall, Calif., for 1912–1916.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1912.				
April 16–30	228	27	108	3,210
May	170	1.0	33.7	2,070
June	1.8	.0	.60	35.7
July	.0	.0	.0	.0
August	.0	.0	.0	.0
September	.0	.0	.0	.0
1912–13.				
December	3	0	1.9	117
January	77	3	19.8	1,220
February	195	6	41.1	2,280
March	157	14	36.1	2,220
April	14	1	10.2	607
May	.3	.1	.28	17
June	.3	0	.09	5
The year	195	0	8.93	6,470
1913–14.				
December	7	1	4.0	246
January	1,530	4	102	6,270
Feb. 1 to 21 and 28	2,820	33	246	10,700
March	210	34	87.5	5,380
April	81	0	33.1	1,970
May	106	1	18.9	1,160
June	4	0	1.3	77
	.....	.....	.....	.....
1914–15.				
November	1	0	0.53	32
December	20	1.5	6.26	385
January	3,730	11	265.	16,300
February	7,000	113	939	52,100
March	1,020	98	308	18,900
April	600	62	133	7,910
May	2,050	142	420	25,800
June	142	28	75.3	4,480
July	28	.5	4.88	300
August	.4	.05	.205	13
The year	7,000	0	175	126,000
1915–16.				
November	11	0	1.7	101
December	143	4	28.4	1,750
January	.....	42	4,180	257,000
The period	.....	.....	.....	259,000

NOTE.—No flow October and November, 1912; July to November, 1913; July to October, 1914; and September and October, 1915.

SAN LUIS REY RIVER NEAR BONSALL, CALIF.

LOCATION.—In SW. ¼ sec. 31, T. 10 S., R. 3 W., near junction of Escondido highway with Oceanside-Bonsall road, 2 miles southwest of Bonsall, and 7 miles northeast of Oceanside, San Diego County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 200 feet above sea level.

RECORDS AVAILABLE.—July 26, 1916, to September 30, 1918. (Gage heights and discharge measurements only.)

GAGE.—Staff in three sections on left bank 200 feet northwest of junction of highways. Zero of gage 122.82 feet above sea level. Previous to August 9, 1916, datum was 0.9 foot lower. January 2, 1918, a new staff was installed on left bank, 200 feet downstream, at an independent datum.

DISCHARGE MEASUREMENTS.—Made by wading near gage at low and medium stages; high-water measurements made from highway bridge at Bonsall.

CHANNEL AND CONTROL.—Sand; very shifting.

DIVERSIONS.—See San Luis Rey River at Bonsall, page 193.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Daily discharge not computed as sufficient discharge measurements have not been made to define the numerous changes in channel. Gage read to hundredths once daily.

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Discharge measurements of San Luis Rey River near Bonsall, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1916.		*Feet.*	*Sec.-ft.*
July 25	Silent and Lee	.....	5.8	Sept. 7	D. L. Lee	1.06	6.5
26	do	2.00	13	8	do	1.05	6.0
27	do	2.00	15	9	do	1.06	6.6
28	do	1.99	14	10	do	1.11	8.9
29	do	1.97	8.8	11	do	1.13	11
30	do	1.99	11	12	do	1.06	8.0
31	do	2.00	12	13	do	1.10	11
Aug. 1	do	1.94	7.2	14	do	1.09	9.8
3	do	1.94	5.2	15	do	1.10	12
4	do	1.95	5.7	Oct. 11	W. J. Isbell	1.13	42
5	do	1.97	8.9	Nov. 15	do	1.28	31
6	do	1.98	7.5	24	do	1.24	42
7	do	1.99	8.3	Dec. 20	F. C. Ebert	1.20	31
8	do	1.98	5.8				
9	do	1.07	6.6	1917.			
10	do	1.00	2.4	Jan. 17	F. C. Ebert	1.25	138
11	do	.....	1.5	21	D. A. McClung	1.43	297
12	do	1.09	6.8	Feb. 11	do	1.16	48
13	do	1.12	8.1	13	F. C. Ebert	1.20	48
14	do	.....	7.9	23	do	1.85	1,610
15	do	1.12	8.4	26	D. A. McClung	1.28	540
16	do	1.11	7.2	Mar. 8	F. C. Ebert	1.19	134
17	do	1.10	6.2	16	do	1.41	133
18	do	1.12	9.1	19	D. A. McClung	1.30	88
19	do	1.11	8.3	27	F. C. Ebert	1.26	58
20	do	1.14	9.7	29	do	1.23	58
21	R. A. Silent	1.14	10	Apr. 11	D. A. McClung	1.30	74
22	do	1.12	8.2	21	McGlashan and Ebert	1.05	83
23	do	1.15	10	May 21	F. C. Ebert	.99	65
24	Silent and Lee	1.28	22	25	do	1.39	129
24	D. L. Lee	1.15	16	June 9	D. A. McClung	1.22	31
24	do	1.18	16	30	do	.99	1.7
27	do	1.13	21	Nov. 16	do	1.12	12
28	do	1.08	13	25	do	1.20	14
29	do	1.07	11	Dec. 21	F. C. Ebert	1.23	16
30	Silent and Lee	1.05	9.8				
31	D. L. Lee	1.04	8.8	1918.			
Sept. 1	do	1.04	7.9	Jan. 2	D. A. McClung	.85	15
2	do	1.03	6.3	Feb. 20	do	.84	40
3	do	1.02	4.3	Mar. 5	F. C. Ebert	.60	27
4	do	1.02	4.8	Apr. 23	D. A. McClung	.69	15
5	do	1.05	6.3	May 5	F. C. Ebert	.58	13
6	do	1.06	6.5	June 22	D. A. McClung	.....	2.0

NOTE.—Datum of gage raised 0.9 foot, August 9, 1916.

Daily gage height, in feet, of San Luis Rey River, near Bonsall, Calif., for 1916–1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1916.				1916.				1916.			
1	.....	1.94	1.04	11	.....	.....	1.13	21	.....	1.14	1.12
2	.....	.....	1.03	12	.....	1.09	1.06	22	.....	1.12	1.12
3	.....	1.94	1.02	13	.....	1.12	1.10	23	.....	1.15	1.10
4	.....	1.95	1.02	14	.....	.....	1.09	24	.....	1.28	1.14
5	.....	1.97	1.05	15	.....	1.12	1.10	25	.....	1.15	1.14
6	.....	1.98	1.06	16	.....	1.11	1.13	26	2.00	1.18	1.12
7	.....	1.99	1.06	17	.....	1.10	1.10	27	2.00	1.13	1.10
8	.....	1.98	1.05	18	.....	1.12	1.14	28	1.99	1.08	1.13
9	.....	1.07	1.06	19	.....	1.11	1.12	29	1.97	1.07	1.11
10	.....	1.00	1.11	20	.....	1.14	1.14	30	1.99	1.05	1.13
								31	2.00	1.04	.....

NOTE.—Datum of gage raised 0.9 foot August 9, 1916.

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Daily gage height, in feet, of San Luis Rey River near Bonsall, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1916–17.										
1	1.16	1.20	1.12	1.07	1.19	1.10	1.25	1.17	1.34	1.09
2	1.25	1.21	1.17	1.00	1.11	1.40	1.23	1.11	1.30	.98
3	1.30	1.20	1.12	1.25	1.04	1.35	1.22	1.10	1.30	.70
4	1.21	1.23	1.19	1.23	1.25	1.25	1.24	1.04	1.25	.70
5	1.14	1.34	1.15	1.13	1.16	1.19	1.21	1.02	1.28	.97
6	1.30	1.28	1.12	1.00	1.23	1.21	1.23	1.06	1.30	.97
7	1.26	1.25	1.15	1.18	1.18	1.23	1.20	1.10	1.28	.97
8	1.18	1.25	1.19	1.00	1.19	1.22	1.15	1.11	1.27	.98
9	1.18	1.22	1.11	1.00	1.17	1.24	1.37	1.31	1.20	.98
10	1.20	1.26	1.00	1.11	1.20	1.43	1.40	1.31	1.22	.97
11	1.12	1.27	1.24	1.00	1.20	1.42	1.39	1.27	1.25	.98
12	1.16	1.23	1.22	1.01	1.18	1.39	1.23	1.30	1.26	.98
13	1.13	1.26	1.16	1.03	1.28	1.38	1.28	1.25	1.21	.98
14	1.20	1.24	1.22	1.23	1.20	1.30	1.30	1.20	1.22	.98
15	1.18	1.25	1.18	1.07	1.15	1.40	1.25	1.09	1.15	.98
16	1.24	1.22	1.19	1.43	1.20	1.29	1.55	1.10	1.12	.98
17	1.23	1.16	1.15	1.30	1.43	1.30	1.80	1.15	1.10	.98
18	1.21	1.20	1.10	1.21	1.60	1.33	1.20	1.20	1.15	.98
19	1.20	1.23	1.20	1.53	1.50	1.44	1.16	1.27	1.10	1.01
20	1.23	1.21	1.15	1.27	1.50	1.40	1.18	1.10	1.05	1.00
21	1.20	1.23	1.16	1.50	1.29	1.36	1.10	1.00	1.00	1.00
22	1.20	1.29	1.20	1.33	1.55	1.28	1.20	1.06	1.00	1.01
23	1.19	1.16	1.23	1.40	2.02	1.39	.86	.98	1.00	1.02
24	1.16	1.23	1.19	1.22	1.35	1.33	1.05	1.25	1.00	1.05
25	1.21	1.19	1.58	1.20	1.30	1.35	1.10	1.38	1.00	1.05
26	1.19	1.16	1.00	1.24	1.39	1.30	1.20	1.45	1.00	1.05
27	1.14	1.11	1.07	1.17	1.24	1.39	1.02	1.40	1.00	1.02
28	1.17	1.01	1.04	1.15	1.11	1.40	1.27	1.33	1.00	1.04
29	1.20	1.02	1.10	1.25	.....	1.23	1.03	1.39	1.01	1.02
30	1.21	1.07	1.12	1.20	.....	1.31	1.10	1.41	1.00	1.04
31	1.20	.....	1.05	1.27	.....	1.20	.....	1.39	.....	1.00
1917–18.										
1	.....	1.00	1.20	1.23	.90	.64	.78	.52	.52	.40
2	.....	1.01	1.20	1.23	.90	.58	.76	.54	.46	.38
3	.....	1.00	1.21	.96	.92	.56	.78	.52	.42	.36
4	.....	1.01	1.20	.98	.90	.64	.80	.50	.44	.36
5	.....	1.00	1.18	.88	.90	.60	.76	.54	.38	.34
6	.....	1.20	1.19	.88	.92	.70	.70	.54	.40	.32
7	.....	1.13	1.20	.87	.92	.92	.76	.56	.42	.32
8	.....	1.12	1.20	.87	.91	1.52	.72	.70	.40	.30
9	.....	1.08	1.16	.85	.88	1.00	.80	.68	.40	.30
10	.....	1.09	1.17	.84	.86	.96	.78	.65	.39	.30
11	.....	1.07	1.18	.88	.76	2.00	.74	.58	.40	.30
12	.....	1.10	1.19	.90	.76	2.77	.78	.56	.40	.30
13	.....	1.09	1.22	1.16	.75	1.75	.78	.54	.38	.28
14	.....	1.12	1.26	1.00	.72	1.23	.75	.52	.36	.36
15	.94	1.11	1.28	.96	.78	1.10	.68	.48	.32	.34
16	.94	1.14	1.28	.93	.80	.98	.67	.46	.34	.34
17	.94	1.10	1.27	.89	.84	.92	.70	.46	.60	.32
18	.96	1.10	1.25	.90	1.18	.82	.68	.46	.58	.30
19	.96	1.16	1.25	.87	1.08	.74	.64	.45	.58	.30
20	.98	1.09	1.23	.91	.86	1.32	.66	.44	.56	.30
21	.98	1.10	1.22	.94	1.00	1.10	.64	.44	.54	.32
22	.97	1.14	1.24	.92	1.14	.96	.70	.42	.56	.30
23	.98	1.13	1.22	.93	1.28	.74	.72	.44	.54	.28
24	.98	1.20	1.22	.94	.98	.92	.72	.43	.54	.28
25	1.00	1.20	1.21	1.04	.76	.92	.68	.42	.52	.28
26	1.00	1.18	1.25	1.14	.76	.94	.70	.44	.50	.28
27	1.00	1.20	1.26	1.00	.74	.92	.66	.50	.46	.26
28	1.00	1.21	1.22	.98	.70	.92	.72	.40	.40	.....
29	.98	1.22	1.23	.90	.....	.86	.64	.36	.36	.....
30	1.00	1.20	1.22	.84	.....	.82	.58	.64	.52	.....
31	1.01	.....	1.23	.85	.....	.84	.....	.58	.....	.....

NOTE.—Stream dry July 29 to Sept. 30 and Oct. 1–14, 1917; and July 28 to Sept. 30, 1918.

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SAN LUIS REY RIVER NEAR OCEANSIDE, CALIF.

LOCATION.—In SW. ¼ SW. ¼ sec. 13, T. 11 S., R. 5 W., opposite Oceanside pumping plant, just above ford, about 1½ miles above mouth of river, and 2 miles northeast of Oceanside, San Diego County.

DRAINAGE AREA.—563 square miles (measured on topographic maps).

ELEVATION.—About sea level.

RECORDS AVAILABLE.—April 17, 1912, to September 30, 1914 (discharge measurements only for 1915).

GAGE.—Staff in three sections on right bank just above ford.

DISCHARGE MEASUREMENTS.—Made from concrete highway bridge three-fourths of a mile below gage or by wading near gage.

CHANNEL AND CONTROL.—Sand; somewhat shifting.

EXTREMES OF DISCHARGE.—1912–1915: Maximun stage recorded, 4.9 feet February 11, 1915 (discharge about 7,000 second-feet); no flow for several months each year.

DIVERSIONS.—See San Luis Rey River at Bonsall, page 193. In addition, several small canals divert water for irrigation in Mission Valley, above the station. Water is also pumped from wells at various points in the valley. Record at this station shows quantity of water wasted into Pacific Ocean.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined except for flood stages. Gage read, usually to half-tenths, twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables, by shifting-control method, or for periods when change in stage was slight by interpolation between discharge measurements. Records fair.

Discharge measurements of San Luis Rey River near Oceanside, Calif., for 1912–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1912.				1914.			
Apr. 17	F. C. Ebert	2.55	215	Mar. 27	F. C. Ebert	1.30	29
May 3	do	2.24	33	Apr. 18	do	1.04	4.6
13	E. W. Case	2.28	46	25	do	1.46	46
21	F. C. Ebert	2.06	9.1	May 9	do	1.13	13
1913.				14	do	.88	1.6
Jan. 17	F. C. Ebert	2.05	7.2	Dec. 14	do		.0
18	do	1.94	2.2	1915.			
Feb. 22	do	2.09	13	Jan. 23	F. C. Ebert	.79	.2
23	do	2.32	104	25	do	.82	1.8
25	W. S. Post	2.23	67	30	C. E. Hickok		1,470
Mar. 12	F. C. Ebert	2.01	20	Feb. 5	K. B. Sleppy	2.2	325
20	do	1.97	10	14	F. C. Ebert	2.57	722
24	W. S. Post	2.14	31	27	do	2.17	296
Apr. 8	F. C. Ebert	1.80	1.4	Mar. 11	do	2.30	345
1914.				26	do	2.06	120
Jan. 27	C. E. Hickok	3.62	1,740	Apr. 7	do	2.08	88
28	do	3.06	734	18	D. L. Lee	1.9	56
30	F. C. Ebert	2.27	155	27	W. J. Isbell	2.23	150
Feb. 4	do	1.42	38	May 6	W. D. McFadden	3.3	1,250
Mar. 9	do	1.62	79	16	F. C. Ebert	2.43	222
23	do	1.16	17	July 6	do		.0

NOTE.—Measurements Jan. 27, 1914, to Jan. 25, 1915, referred to temporary gage on left bank opposite original gage and at same datum.

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Daily discharge, in second-feet, of San Luis Rey River near Oceanside, Calif., for 1912–1914.

Day.	Apr.	May.	Day.	Apr.	May.	Day.	Apr.	May.
1912.			1912.			1912.		
1		47	11		58	21	208	12
2		39	12		42	22	128	8.4
2		31	13		31	23	107	6
4		24	14		31	24	91	5.2
5		18	15		24	25	81	2
6		18	16		20	26	62	2
7		17	17	189	15	27	72	2
8		42	18	208	12	28	58	2
9		156	19	218	17	29	58	2
10		128	20	208	13	30	53	1
						31		.0

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1912–13.					1913–14.					
1			74	6	1		130	102	72	41
2			40	10	2		45	151	55	41
3			27	6	3		43	124	41	41
4			27	10	4		41	102	29	35
5			14	10	5		41	102	41	29
6			14	6	6		41	82	41	29
7			10	4	7		35	72	48	19
8			10	1	8		19	72	41	19
9			6	.8	9		29	72	29	11
10			6	.8	10		29	55	35	5
11			6	.5	11		29	72	35	5
12			14	.5	12		29	55	29	2
13			27		13		29	55	29	5
14			27		14		29	41	29	5
15			27		15		15	41	19	2
16			27		16		29	41	15	1
17	7		27		17		24	29	11	
18	2		14		18		29	29	8	
19			14		19		408	29	4	
20			6		20		1,310	19	2	
21			14		21		2,650	19	2	
22		18	20		22		3,260	19	8	
23		198	27		23		1,410	19	41	
24		95	27		24		295	11	55	
25		74	40		25		180	11	55	
26		290	40		26		165	29	41	
27		125	27		27	1,460	137	29	35	
28		125	14		28		610	124	41	29	
29			14		29		230		72	29	
30			6		30		150		102	29	
31			6		31		140		180		

NOTE.—Daily discharge determined as follows, 1912: Apr. 17 to May 28, from a rating curve well defined above 8 second-feet; May 29–30, interpolated.
1913: Feb. 23 to Apr. 12, from fairly well defined rating curve.
1914: Jan. 27 to 30 and Feb. 4 to May 16, from fairly well defined rating curve; Jan. 31 to Feb. 3, by shifting-control method. Stream dry on all days when discharge is omitted.

Monthly discharge of San Luis Rey River near Oceanside, Calif., for 1912-1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet.)	Month.	Discharge in second-feet.			Run-off (total in acre-feet.)
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912.					1913–14.				
April 17–30	218	53	124	3,440	January	1,460	0	83.5	5,130
May	156	0	26.6	1,640	February	3,260	19	379	21,000
1912–13.					March	180	11	60.5	3,720
January	7	0	.3	18	April	72	2	31.2	1,860
February	290	0	33.0	1,830	May	41	0	9.4	578
March	74	6	21.0	1,290	The year	3,260	0	44.6	32,300
April	10	10	1.85	110					
The year	290	0	4.50	3,250					

NOTE.—No flow in months for which record is not given.

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SAN LUIS REY RIVER AT OCEANSIDE, CALIF.

Location.—In SE. ¼ NE. ¼ sec. 22, T. 11 S., R. 5 W., at highway bridge about half a mile above mouth, at Oceanside, San Diego County.

Drainage area.—565 square miles (measured on topographic maps).

Elevation.—Sea level.

Records available.—January 16–31, 1916 (discharge measurements, 1916–1917).

Discharge measurements.—Made from concrete highway bridge until its failure at 9.30 p. m. January 27, 1916; measurements January 28 to February 1, 1916, were made from a boat at nearly the same site. Later measurements were made from temporary highway bridge or by wading.

Channel and control.—Sand; shifting. The discharge measurement made at 6 p. m. January 27, 1916, indicated that the scour in the main channel amounted to about 10 feet, as compared with the cross section measured May 25, 1916.

Accuracy.—Stage-discharge relation not permanent. Mean daily discharge January 16 to 31, 1916, computed from a hydrograph based on discharge measurements and compared with record of flow at station on San Luis Rey River near Mesa Grande. Records fair.

Discharge measurements of San Luis Rey River at Oceanside, Calif., for 1916-1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1916.		*Feet.*	*Sec.-ft.*
Jan. 16	McFadden and Ireland	2.45	216	Jan. 31	G. S. Strout	.....	[a] 1,260
17	Ireland and Strout	6.0	[a] 27,100	Feb. 1	....do	.....	982
18	....do	4.0	[a] 16,200	24	F. C. Ebert	2.83	463
18	....do	4.0	[a] 20,800	Mar. 29	W. S. Post	2.99	221
19	....do	3.0	[a] 9,990	Apr. 20	F. C. Ebert	2.93	159
19	....do	2.5	[a] 9,080	May 7	....do	2.95	54
20	....do	2.0	[a] 3,690	9	....do	2.90	52
21	....do	1.8	2,000	June 15	Ebert and Ellis	2.60	11
22	C. B. Ireland	1.4	1,650	July 10	W. S. Post	.....	4.7
22	....do	1.4	1,480	21	....do	8.55	9.1
23	....do	1.3	1,460	Nov. 15	W. J. Isbell	8.75	24
23	....do	1.3	1,240	25	....do	8.81	33
24	....do	1.3	1,150				
24	....do	1.3	1,030	1917.			
25	....do	1.4	1,310	Jan. 20	McClung and Carr	9.22	474
25	....do	1.5	1,580	Feb. 11	....do	8.85	45
26	....do	1.6	1,800	25	....do	9.03	650
27	Ireland and Strout	.....	[a] 9,640	Mar. 19	D. A. McClung	9.05	78
27	....do	.....	[a] 55,400	Apr. 11	McClung and Holly	9.19	107
28	Strout and Bowan	.....	[a] 21,900	June 9	D. A. McClung	8.92	23
30	G. S. Strout	.....	[a] 2,190	30	....do	.....	.0

[a] Float measurement.

Daily discharge, in second-feet, of San Luis Rey River at Oceanside, Calif., for January, 1916.

Day.	Maximum.	Minimum.	Mean.	Day.	Maximum.	Minimum.	Mean.
1	6,500	216	2,180	11	3,800	1,600	2,230
2	40,000	10,000	20,800	12	95,600	3,800	33,800
3	21,500	13,500	18,100	13	85,000	7,700	28,200
4	13,500	5,700	9,640	14	7,700	3,700	5,330
5	5,700	2,400	3,730	15	3,700	1,800	2,650
				16	1,800	1,170	1,430
6	2,400	1,700	1,980				
7	1,700	1,480	1,590				
8	1,480	1,200	1,350				
9	1,200	1,030	1,110				
10	1,600	1,100	1,400				

Total run-off for period:
Acre-feet 269,00
Depth in inches on drainage area 8.92

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CANADA VERDE CREEK NEAR WARNER SPRINGS, CALIF.

LOCATION.—In San Jose del Valle grant, at mouth of canyon, 1½ miles southeast of Warner Springs, San Diego County.

DRAINAGE AREA.—2.8 square miles (measured on topographic maps).

ELEVATION.—About 3,050 feet above sea level.

RECORDS AVAILABLE.—1913 to August 29, 1915 (discharge measurements only).

GAGE.—Vertical staff on right bank at mouth of canyon.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Sand; shifting.

DIVERSIONS.—None.

REGULATION.—None.

Discharge measurements of Canada Verde Creek near Warner Springs, Calif., for 1913–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Feb. 5	W. J. Isbell	1.03	0.5	Mar. 24	W. J. Isbell	1.67	.8
Mar. 1	do		1.1	30	do	1.66	.8
Apr. 5	do	.95	1.3	Apr. 9	do	1.63	.7
May 16	do	.82	.56	May 4	do	1.65	.7
June 14	F. C. Ebert	.75	.25	9	do	1.66	.7
July 21	W. J. Isbell	1.75	.1	22	do	1.57	.4
Aug. 22	do	1.46	.02	June 15	do	1.57	.4
Sept. 2	do	1.52	.1	July 11	do	1.61	.3
10	do	1.55	.02	Sept. 16	do	1.61	.1
25	do		.02	Oct. 16	do	1.66	.2
Oct. 7	do	1.60	.1	Dec. 15	do	1.73	.4
17	do	1.60	.1				
Nov. 7	do	1.63	.2	1915.			
18	do	1.64	.2	Jan. 1	W. J. Isbell	1.70	.4
24	do	1.67	.2	Feb. 5	do	1.88	1.4
Dec. 13	do	1.76	.4	Apr. 3	do	1.64	1.7
				19	do	1.45	1.4
1914.				May 22	do	1.54	4.6
Jan. 9	W. J. Isbell	1.77	.3	June 24	do	1.03	.1
14	do	1.76	.3	July 22	do	1.15	.7
Feb. 4	do	1.76	.8	Aug. 5	do	.95	.1
Mar. 6	do	1.76	1.0	29	do	1.00	.2
19	do	1.65	.5				

AGUA CALIENTE CREEK NEAR WARNER SPRINGS, CALIF.

LOCATION.—In San Jose del Valle grant, about 1 mile northwest of Warner Springs, San Diego County.

DRAINAGE AREA.—19.2 square miles (measured on topographic maps).

ELEVATION.—About 2,950 feet above sea level.

RECORDS AVAILABLE.—February 5, 1913, to November 10, 1915. (Discharge measurements only.)

GAGE.—Vertical staff on left bank at mouth of canyon. The original gage was washed out March 6, 1914; new gage installed March 24, 1914, at an independent datum.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Sand; shifting.

DIVERSIONS.—None.

REGULATION.—None.

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Discharge measurements of Agua Caliente Creek near Warner Springs, Calif., for 1913–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Feb. 11	W. J. Isbell	1.90	.4	May 9	W. J. Isbell	.41	1.1
16	do	1.21	.2	20	do	.38	1.1
Mar. 16	do	1.18	5.7	July 11	do		.3
Apr. 10	do	2.04	2.1	Oct. 16	do	.35	.2
May 18	do	1.94	.4	1915.			
31	do	1.94	.4	Jan. 1	W. J. Isbell	.35	.4
June 10	do	1.95	.4	19	do	.43	.3
14	F. C. Ebert	1.95	.4	Mar. 24	do		9.4
July 15	W. J. Isbell	.93	.2	Apr. 19	do		1.2
21	do	.95	.2	May 7	do		86
Aug. 22	do	.93	.2	22	do	1.50	13
25	do	.91	.2	July 1	do	1.29	2
Sept. 2	do	.77	.2	15	do	1.23	1.1
10	do	.79	.2	22	do	1.23	.8
25	do	.83	.1	29	do	1.25	.6
Oct. 7	do	.85	.2	Aug. 5	do	1.23	.7
17	do	.86	.1	12	do	1.23	.6
1914.				Sept. 3	do	1.21	.5
Jan. 9	W. J. Isbell	.88	.2	9	do	1.22	.4
14	do	.88	.2	30	do	1.27	.5
Feb. 4	do	1.10	2.2	Oct. 14	do	1.27	.5
Mar. 6	do		4	28	do	1.28	.5
24	do	.50	1.6	Nov. 10	do	1.29	.6
Apr. 15	do	.46	1.2				

WEST FORK OF SAN LUIS REY RIVER[1] NEAR WARNER SPRINGS, CALIF.

LOCATION.—In SW. ¼ sec. 15, T. 10 S., R. 2 W., in San Jose del Valle grant, 2¾ miles above junction with San Luis Rey River, and 7½ miles northwest of Warner Springs, San Diego County.

DRAINAGE AREA.—25.6 square miles (measured on topographic maps).

ELEVATION.—About 2,800 feet above sea level.

RECORDS AVAILABLE. January 25, 1913, to November 18, 1915.

GAGE.—Sanders & Rising water-stage recorder on left bank near mouth of canyon, with staff in two sections fastened to tree on same bank about 40 feet upstream.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Sand; shifting. A concrete control has been built across channel just below gage, but accumulation of sand causes slight changes in stage-discharge relation.

EXTREMES OF DISCHARGE.—1913–1915: Maximum stage recorded, 4.37 feet February 19, 1914 (discharge, 580 second-feet); no flow for several months each year.

DIVERSIONS.—None.

REGULATIONS.—None.

ACCURACY.—Stage-discharge relation not permanent except for short periods. Mean daily gage height determined by inspecting recorder graph. Discharge computed by interpolation between measurements when changes in stage were slight, from rating curves covering short periods, and by shifting-control method. For high stages, when gage-height record was missing, discharge was estimated from record of flow of station on San Luis Rey River near Mesa Grande. Records fair.

[1] Known locally as Rincon Creek.

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Discharge measurements of West Fork of San Luis Rey River near Warner Springs, Calif., for 1913–1916.

Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*
Jan. 25	W. J. Isbell	2.27	0.9
Feb. 4	do	2.23	.9
11	do	2.37	1.9
19	F. C. Ebert	2.29	1.3
Mar. 2	W. J. Isbell	2.46	11
16	do	2.49	11
26	do	2.54	16
Apr. 10	do	2.42	5.7
17	do	2.38	4.6
23	do	2.40	4.1
23	do	2.48	10
May 1	do	2.38	3
10	F. C. Ebert	2.33	2.3
18	W. J. Isbell	2.25	1.4
23	do	2.23	1.6
31	do	2.20	1.1
June 6	do	2.18	.8
12	do	2.17	.6
14	F. C. Ebert	2.10	.2
18	W. J. Isbell	2.12	.2
25	do	2.12	.2
July 1	do	2.08	.02
9	R. W. Day	2.08	.03
Sept. 18	W. J. Isbell		.0
29	do		.0
Oct. 14	do		.0
20	do		.0
Nov. 12	do		.0
14	do	2.12	.5
26	do	2.06	.09
Dec. 23	do	2.28	2.4
1914.			
Jan. 1	W. J. Isbell	2.18	.8
8	do	2.12	.3
14	do	2.08	.3
22	do	2.33	2.9
29	do	2.70	36
Feb. 3	do	2.50	13
4	do	2.49	8.6
11	do	2.41	5.7
18	do	2.40	5.8
20	do	3.34	123
22	do	3.59	184
23	do	3.26	97
25	Jas. Ridder	2.96	56
Mar. 4	W. J. Isbell	2.64	22
11	do	2.53	14
18	do	2.46	9.8
25	do	2.46	9.3
30	do	2.78	41
Apr. 1	J. E. Ridder	2.58	21
8	W. J. Isbell	2.48	12
1914.		*Feet.*	*Sec.-ft.*
Apr. 15	W. J. Isbell	2.42	9.6
22	do	2.52	17
29	do	2.51	14
May 6	do	2.44	11
11	F. C. Ebert	2.40	7
13	W. J. Isbell	2.39	7.2
20	do	2.34	4.8
27	do	2.33	4.3
June 3	do	2.27	2.8
18	do	2.15	1.3
Dec. 12	do	2.13	.4
1915.			
Jan. 8	W. J. Isbell	2.18	.5
27	do	2.46	5.6
31	do	3.07	68
Feb. 4	do	2.99	55
13	do	3.31	106
18	do	2.98	50
Mar. 4	do	3.10	66
11	do	3.03	60
18	do	2.83	37
25	do	2.73	27
Apr. 8	do	2.67	19
16	do	2.54	17
23	do	2.97	62
May 7	do	3.38	159
10	do	3.24	120
13	do	3.06	79
20	do	2.94	52
27	do	2.80	31
June 3	do	2.70	22
10	do	2.63	20
24	do	2.56	8.8
July 1	do	2.51	5.7
8	do	2.53	4.7
15	do	2.50	2.4
22	do	2.45	2.1
29	do	2.41	1.5
Aug. 5	do	2.35	1.0
12	do	2.31	.6
19	do	2.29	.4
26	do	2.20	.06
Sept. 9	do	2.20	.05
16	do	2.28	.2
Nov. 11	do	2.34	.9
18	do	2.32	.6
1916.			
Feb. 11	W. J. Isbell	2.20	103
18	do	2.40	76
Mar. 9	do	2.55	79
24	do	2.70	68
30	do	2.80	50

Daily discharge, in second-feet, of West Fork of San Luis Rey River near Warner Springs, Calif., for 1913–1915.

Day.	Mar.	Apr.	May.	June.	July.
1913.					
1		12	3	1	0.2
2		12	3	1	.2
3		12	3	1	.2
4		7.5	3	.5	.2
5		7.5	2.5	1	.2
6		7.5	2.5	.5	.2
7		7.5	2.5	.2	.2
8		7.5	2.5	.2	.2
9		5	2.5	.5	.2
10		5	2.5	.5	.2
11		5	2.5	.5	.2
12		5	2.5	.5	.2
13		5	2	.5	.2
14		5	2	.2	.1
15		5	2	.2	.1
1913.					
16		5	2	0.2	0.2
17		5	1.5	.2	.2
18		5	1.5	.2	.2
19		5	1.5	.2	.1
20		5	1.5	.2	.1
21		5	1.5	.2	.1
22		5	1.5	.2	
23		7	1.5	.2	
24		6.5	1.5	.2	
25		6	1	.2	
26	17	5.5	1	.2	
27	17	5	1	.2	
28	12	4.5	1	.2	
29	12	4	1	.2	
30	12	3.5	1	.2	
31	12		1		

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Daily discharge, in second-feet, of West Fork of San Luis Rey River near Warner Springs, Calif., for 1913–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	.....	.....	0.1	1.0	28	32	23	14	3.5	0.8	.....	.....
2	.....	.....	.1	.5	27	23	19	18	2.5	.2	.....	.....
3	.....	.....	.1	.5	13	23	18	15	2.5	.2	.....	.....
4	.....	.....	.1	.5	8.5	23	14	15	2.5	.2	.....	.....
5	.....	.....	.1	.5	9.0	23	18	11	2.5	.2	.....	.....
6	.....	.....	.1	.5	9.5	19	17	11	2.5	.2	.....	.....
7	.....	.....	.0	.5	10	19	13	11	3.5	.2	.....	.....
8	.....	.....	.0	.2	14	19	12	8	7	.2	.....	.....
9	.....	.....	.0	.2	15	15	10	7.5	3.5	.1	.....	.....
10	.....	.....	.0	.2	20	15	10	7.5	14	.1	.....	.....
11	.....	.....	.0	.2	5.5	15	10	7	8	.1	.....	.....
12	.....	0.1	.0	.2	5 5	12	10	7	2.5	.....	.....	.....
13	.....	.3	0	.2	5.5	12	11	7	1.3	.....	.....	.....
14	.....	.5	0	.2	5.5	12	11	7	1.3	.....	.....	.....
15	.....	.5	0	1.5	5.5	13	9.0	7	1.3	.....	.....	.....
16	.....	.4	0	5	5.5	13	8.5	7	1.3	.....	.....	.....
17	.....	.4	0	5	5.5	13	8.5	7	1.3	.....	.....	.....
18	.....	.4	0	7.5	20	10	8.5	7	1.3	.....	.....	.....
19	.....	.3	2.3	12	241	10	8.5	5	1.3	.....	.....	.....
20	.....	.3	5	7.5	306	10	8.5	5	1.3	.....	.....	.....
21	.....	.3	7.5	5	403	9.5	8.5	5	1.3	.....	.....	.....
22	.....	.2	7.5	3.5	172	9.5	19	3.5	1.3	.....	.....	.....
23	.....	.2	1.5	3.5	101	9	19	3.5	.8	.....	.....	.....
24	.....	.2	.1	3.5	61	9	23	3.5	.8	.....	.....	.....
25	.....	.1	.5	7.5	55	9	18	3.5	.8	.....	.....	.....
26	.....	.1	.5	192	48	9	14	3.5	.8	.....	.....	.....
27	.....	.1	.1	220	43	13	14	4.5	.8	.....	.....	.....
28	.....	.1	.1	38	38	42	14	4.5	.8	.....	.....	.....
29	.....	.1	.1	36	.....	22	14	3.5	.8	.....	.....	.....
30	.....	.1	.2	35	.....	33	17	3.5	.8	.....	.....	.....
31	.....	.....	1.5	30	.....	33	.....	3.5	.....	.....	.....	.....
1914–15.												
1	.....	.....	.1	.8	68	100	23	123	36	5.5	1.5	0.1
2	.....	.....	.2	.8	260	125	23	103	36	5.5	1	.1
3	.....	.....	.2	.3	125	90	23	95	22	5.5	1	.1
4	.....	.....	.2	.8	55	66	22	104	22	5	1	.1
5	.....	.....	.2	1.0	50	66	19	260	22	5	1	.1
6	.....	.....	.2	1.0	38	66	19	155	20	4.5	.9	.1
7	.....	.....	.2	.8	34	63	19	182	20	4.5	.9	.1
8	.....	.....	.2	.8	30	63	19	215	20	4.5	.8	.1
9	.....	.....	.2	.8	105	63	19	155	20	4	.8	.1
10	.....	.....	.5	1.0	365	63	19	145	20	4	.7	.1
11	.....	.....	1.0	.8	385	63	18	155	19	3.5	.7	.1
12	.....	.....	.5	1.0	170	63	18	105	18	3.5	.6	.1
13	.....	.....	.2	.8	106	63	18	95	17	3	.6	.2
14	.....	.....	.2	.8	80	63	17	90	17	3	.6	.2
15	.....	.....	.1	.8	70	57	17	85	16	2.5	.5	.2
16	.....	.....	.2	.3	50	57	17	75	16	2.5	.5	.2
17	.....	.....	.5	.8	50	57	14	130	15	2.5	.4	.2
18	.....	.....	.5	.8	52	39	14	150	14	2.5	.4	.2
19	.....	.....	.5	.8	46	39	14	85	13	2.5	.4	.2
20	.....	.....	.5	.8	46	38	14	55	12	2	.4	.2
21	.....	.....	.5	1.0	46	34	28	45	11	2	.3	.2
22	.....	.....	.5	8.5	46	29	80	45	10	2	.3	.2
23	.....	.....	2.5	5.5	46	29	64	45	9	2	.2	.2
24	.....	.....	1.0	5.5	46	29	93	45	9	2	.2	.2
25	.....	.....	.8	20	82	29	86	39	8.5	2	.1	.2
26	.....	.....	.8	8.5	73	24	72	38	8	2	.1	.2
27	.....	.....	1.0	5.5	73	24	73	33	7.5	1.5	.6	.2
28	.....	.....	.8	43	66	24	74	36	7	1.5	.2	.2
29	.....	.....	.8	365	.....	33	68	36	6.5	1.5	.1	.2
30	.....	.....	.8	200	.....	33	122	36	6	1.5	.1	.2
31	.....	.....	.3	68	.....	24	.....	36	.....	1.5	.1	.....

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Daily discharge, in second-feet, of West Fork of San Luis Rey River near Warner Springs, Calif., for 1913–1915—Continued.

Day.	Oct.	Nov.	Day.	Oct.	Nov.	Day.	Oct.	Nov.
1915.			1915.			1915.		
1	0.05	0.02	11	0.03	0.9	21	0.03	.....
2	.03	.02	12	.04	.9	22	.03	.....
3	.02	.02	13	.06	.9	23	.02	.....
4	.01	.02	14	.06	.9	24	.02	.....
5	.01	.02	15	.05	.75	25	.02	.....
6	.01	.02	16	.04	.75	26	.02	.....
7	.01	.02	17	.03	.6	27	.01	.....
8	.01	.02	18	.03	.6	28	.01	.....
9	.02	.02	19	.03	.6	29	.01	.....
10	.02	.25	20	.03	.....	30	.01	.....
						31	.01	.....

NOTE.—Daily discharge determined as follows: 1913: Mar 26 to Apr. 22 and May 18 to July 21, from well-defined rating curve; Apr. 23 to May 17, by shifting-control method.

1913–14: Nov. 12 to Dec. 10, 1913, by interpolation between measurements; Dec. 11, 1913, to Jan. 25, 1914, from previous rating curve; Jan. 26–28, no gage-height record, discharge estimated as 22 per cent of flow of San Luis Rey River near Mesa Grande.

1914–15: Dec. 1, 1914, to Sept. 30, 1915, from rating curves covering short periods, by interpolation between measurements, and by shifting-control method; Jan. 29 and 30, Feb. 2 and 3, 9–12 and 14–17, Mar. 1–3, 1915, no gage-height record; discharge estimated as 25 per cent of flow of San Luis Rey River near Mesa Grande; Jan. 29 to July 11, 1914, from rating curves covering short periods and shifting-control method. Stream dry on days for which discharge is not given.

Monthly discharge of West Fork of San Luis Rey River near Warner Springs, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913.					1914–15.				
March	17	12	13.7	16	December	2.5	0.1	0.52	32
April	12	3.5	6.18	368	January	365	.3	24.1	1,480
May	3	1	1.90	117	February	385	30	95.1	5,280
June	1	.2	.38	23	March	125	24	52.1	3,200
July	.2	0	.12	7	April	122	14	37.5	2,230
					May	260	33	96.6	5,940
The period	17	0	3.18	531	June	36	6	15.9	946
					July	5.5	1.5	3.06	188
1913–14.					August	1.5	.1	.55	34
November	.5	0	.16	10	September	.2	.1	.16	10
December	7.5	0	.89	55					
January	220	.2	19.9	1,220	The year	385	0	26.7	19,300
February	403	5.5	60	3,330					
March	42	9	17.1	1,050	1915.				
April	23	8.5	13.6	809	October	.06	.01	.025	.....
May	18	3.5	7.29	448	November 1–18	.9	.02	.37	.....
June	14	.8	2.46	146					
July	.8	0	.08	5					
The year	403	0	9.78	7,070					

NOTE.—No flow August to October, 1913 and August to November, 1914.

MATAGUAL CREEK NEAR WARNER SPRINGS, CALIF.

LOCATION.—In SE. ¼ sec. 28, T. 11 S., R. 3 E., in Valle de San Jose grant, near mouth of canyon, and about 5 miles southwest of Warner Springs, San Diego County.

DRAINAGE AREA.—9.2 square miles (measured on topographic maps).

ELEVATION.—About 2,900 feet above sea level.

RECORDS AVAILABLE.—November 16, 1912, to June 28, 1916. (Discharge measurements only for years 1912–13 and 1915–16.)

GAGE.—Depth of water is measured over a reference hub in pool above control near mouth of canyon.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

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CHANNEL AND CONTROL.—Sand; shifting. A timber control has been constructed just below gage.

EXTREMES OF DISCHARGE.—1912–1915: Maximum stage not known, record incomplete; maximum mean daily discharge, February 21, 1914, 125 second-feet (estimated); minimum discharge, September, 1914, 0.2 second-feet (estimated).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths about once a week by hydrographer. Discharge for days for which no readings were reported interpolated between discharge measurements or estimated by comparison with records of flow at stations on West Fork of San Luis Rey River and Carrizo Creek near Warner Springs. Records fair.

Discharge measurements of Matagual Creek near Warner Springs, Calif., for 1912–1916.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1912.			
Nov. 16	W. J. Isbell	0.27	0.7
Dec. 7	do	.31	.9
14	do	.31	.8
18	F. C. Ebert	.30	.9
21	W. J. Isbell	.29	.9
28	do	.29	.8
1913.			
Jan. 3	W. J. Isbell	.29	.9
9	do	.31	.9
14	do	.31	1.0
19	do	.38	1.2
24	do	.33	1.0
Feb. 1	do	.33	1.0
8	do	.30	1.1
14	do	.33	1.0
19	F. C. Ebert	.34	1.1
26	W. J. Isbell	.52	2.6
Mar. 13	do	.44	1.6
21	do	.41	1.6
21	do	.42	1.7
Apr. 2	do	.41	1.7
11	do	.35	1.2
29	do	.32	1.3
May 6	do	.32	1.2
10	F. C. Ebert	.30	1.0
16	W. J. Isbell	.26	.9
22	do	.25	.8
30	do	.23	.8
June 5	do	.23	.8
9	do	.25	.8
14	do	.25	.8
20	do	.20	.4
27	do	.27	.8
July 2	do	.18	.3
18	do	.13	.2
23	do	.16	.2
26	do	.18	.4
Aug. 21	do	.17	.2
24	do	.15	.2
Sept. 1	do	.18	.4
9	do	.17	.3
23	do	.16	.3
29	do	.17	.4
Oct. 6	do	.19	.4
14	do	.16	.3
21	do	.19	.4
29	do	.19	.4
Nov. 17	do	.22	.6
25	do	.23	.6
Dec. 2	do	.23	.7
10	do	.24	.8
17	do	.24	.7
29	do	.24	.7
1914.			
Jan. 9	W. J. Isbell	.24	.6
24	do	.26	.8
30	do	.42	2.8
1914.			
Feb. 3	W. J. Isbell	0.34	1.4
9	do	.30	1.2
12	do	.30	1.1
24	do	.85	7.4
26	Jas. Ridder	.75	4.9
Mar. 7	W. J. Isbell	.44	2.6
13	do	.40	1.8
21	do	.38	1.6
27	do	.41	1.6
29	do	.42	1.9
Apr. 10	do	.38	1.6
14	do	.33	1.2
May 2	do	.41	2.0
8	do	.37	1.5
11	F. C. Ebert	.33	1.2
27	W. J. Isbell	.28	1.0
June 4	do	.29	1.0
27	do	.20	.4
July 10	do	.15	.2
25	do	.17	.3
Sept. 9	do	.18	.3
Oct. 16	do	.18	.3
Nov. 28	do	.20	.5
Dec. 14	do	.23	.8
21	do	.26	.9
1915.			
Jan. 8	W. J. Isbell	.23	.7
18	do	.24	.6
Feb. 4	do	.83	10
13	do	.83	16
19	do	.79	8.7
Mar. 3	do	.83	11
13	do	.80	11
26	do	.64	5.8
Apr. 3	do	.63	4.5
17	do	.58	3.8
May 8	do	.98	20
14	R. W. Day	.85	10
June 28	W. J. Isbell	.56	3.4
July 10	do	.39	1.8
16	do	.34	1.3
27	do	.37	1.7
Aug. 9	do	.36	1.5
14	do	.35	1.3
19	do	.29	.7
27	do	.36	1.3
Sept. 11	do	.32	.7
29	do	.34	.9
Oct. 13	do	.36	1.0
25	do	.36	.8
Nov. 13	do	.40	1.2
1916.			
Feb. 9	W. J. Isbell	.....	37
14	do	1.50	29
Mar. 16	do	1.48	14
28	do	1.60	22
June 28	do	.....	4.0

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Daily discharge, in second-feet, of Matagual Creek near Warner Springs, Calif., for 1913–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.4	0.4	0.7	0.7	2.0	3.5	1.8	2.0	1.0	0.3	.....	.....
2	.4	.4	.7	.7	2.0	3.0	1.8	2.0	1.0	.3	.....	.....
3	.4	.4	.7	.7	1.4	2.6	1.8	1.9	1.0	.3	.....	.....
4	.4	.4	.7	.6	1.4	2.6	1.8	1.8	1.0	.3	.....	.....
5	.4	.4	.7	.6	1.3	2.6	1.7	1.8	1.0	.3	.....	.....
6	.4	.4	.8	.6	1.3	2.6	1.7	1.7	1.0	.2	.....	.....
7	.4	.5	.8	.6	1.3	2.6	1.7	1.6	.9	.2	.....	.....
8	.4	.5	.8	.6	1.2	2.4	1.7	1.5	.9	.2	.....	.....
9	.4	.5	.8	.6	1.2	2.2	1.6	1.4	.9	.2	.....	0.3
10	.4	.5	.8	.6	1.2	2.2	1.6	1.3	.9	.2	.....	.....
11	.3	.5	.8	.6	1.1	2.0	1.5	1.2	.8	.2	.....	.....
12	.3	.5	.8	.6	1.1	1.9	1.4	1.2	.8	.2	.....	.....
13	.3	.5	.8	.6	1.1	1.8	1.3	1.2	.8	.2	.....	.....
14	.3	.5	.7	.6	1.1	1.8	1.2	1.3	.8	.2	.....	.....
15	.3	.6	.7	1.0	1.1	1.8	1.2	1.3	.7	.2	.....	.....
16	.3	.6	.7	2.0	1.1	1.7	1.2	1.3	.7	.2	.....	.....
17	.3	.6	.7	3.0	1.1	1.7	1.2	1.4	.7	.2	.....	.....
18	.4	.6	.7	4.5	2.0	1.7	1.5	1.4	.7	.3	.....	.....
19	.4	.6	.7	6.0	65	1.6	1.5	1.4	.6	.3	.....	.....
20	.4	.6	.7	3.0	120	1.6	1.5	1.5	.6	.3	.....	.....
21	.4	.6	.7	1.5	125	1.6	1.5	1.5	.6	.3	.....	.....
22	.4	.6	.7	.8	75	1.6	2.0	1.5	.6	.3	.....	.....
23	.4	.6	.7	.8	25	1.6	2.0	1.4	.5	.3	.....	.....
24	.4	.6	.7	.8	7.4	1.6	2.0	1.3	.5	.3	.....	.....
25	.4	.6	.7	3.0	6.0	1.6	2.0	1.2	.5	.3	.....	.....
26	.4	.6	.7	65	4.9	1.6	2.0	1.1	.4	.3	.....	.....
27	.4	.6	.7	80	4.5	1.6	2.0	1.0	.4	.3	.....	.....
28	.4	.6	.7	14	4.0	1.8	2.0	1.0	.4	.3	.....	.....
29	.4	.7	.7	2	.....	1.9	2.0	1.0	.4	.3	.....	.....
30	.4	.7	.7	2.8	.....	1.9	2.0	1.0	.4	.3	.....	.....
31	.4	.....	.7	2.5	.....	1.9	.....	1.0	.....	.3	.....	.....
1914–15.												
1	.3	.8	.6	.7	10	20	5	15	8	3	1.5	1
2	.3	.8	.6	.7	30	15	4	10	8	3	1.5	1
3	.3	.6	.6	.7	20	11	4.5	12	8	3	1.5	1
4	.3	.6	.6	.7	10	11	4	15	8	3	1.5	.9
5	.3	.5	.6	.7	5	11	4	25	7.5	2.5	1.5	.9
6	.3	.4	.5	.7	5	11	4	20	7.5	2.5	1.5	.9
7	.3	.3	.5	.7	4	11	4	20	7	2.5	1.5	.8
8	.3	.3	.5	.7	4	11	4	20	7	2	1.5	.8
9	.3	.3	1.0	.7	4	11	4	15	6.5	2	1.5	.8
10	.3	.3	1.5	.7	60	11	4	15	6.5	2	1.5	.7
11	.3	.4	1.0	.7	75	11	4	15	6	2	1.5	.7
12	.3	.4	.8	.7	30	11	4	12	5	2	1.5	.7
13	.3	.4	.8	.7	16	11	4	11	4.5	1.5	1.5	.7
14	.3	.4	.8	.6	14	10	4	10	4	1.5	1.5	.7
15	.3	.4	.8	.6	12	9	4	10	4	1.5	1.5	.7
16	.3	.4	.8	.6	11	9	4	10	4	1.5	1.0	.8
17	.3	.4	.8	.6	10	8	4	10	4	1.5	.9	.8
18	.2	.4	.9	.6	9	8	4	10	4	1.5	.8	.8
19	.2	.4	.9	.6	8.5	7	4	10	4	1.5	.7	.8
20	.2	.4	.9	.6	9	7	4	9	4	1.5	.7	.8
21	.2	.4	.9	1	9.5	6	5	9	4	1.5	.8	.8
22	.8	.5	.9	2	10	6	5	9	3.5	1.5	.9	.8
23	.3	.5	.9	2	10	6	5	9	3.5	1.5	1	.8
24	.3	.5	.9	2	10	6	5	9	3.5	1.5	1	.8
25	.3	.5	.5	3	10	6	5	9	3.5	1.5	1	.9
26	.3	.5	.4	.8	10	6	5	9	3.5	1.5	1.5	.9
27	.5	.5	.5	.6	10	6	5	9	3.5	1.5	1.5	.9
28	.7	.5	.8	7	8	6	5	9	3.5	1.5	1.5	.9
29	.8	.5	.8	55	.....	5	5	9	3.5	1.5	1.5	.9
30	.8	.5	.6	35	.....	5	10	8	3.5	1.5	1.5	.9
31	.8	.....	.4	10	.....	5	.....	8	.....	1.5	1.5	.....

NOTE.—For discharge during August and September, 1914, see table of monthly discharge.

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Monthly discharge of Matagual Creek near Warner Springs, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913–14.					1914–15.				
October			0.38	23	October	0.8	0.2	0.37	23
November			.54	32	November	.8	.3	.46	27
December			.73	45	December	1.5	.4	.75	46
January			6.50	400	January	55	.6	4.25	261
February			16.5	916	February	75	4	15.1	839
March			2.02	124	March	20	5	8.94	550
April			1.67	99	April	10	4	4.55	271
May			1.39	85	May	25	8	12.0	738
June			.72	43	June	8	3.5	5.10	304
July			.26	16	July	3	1.5	1.87	115
August			.30	18	August	1.5	.7	1.3	80
September			.20	12	September	1	.7	.83	49
The year			2.50	1,810	The year	75	.2	4.56	3,300

CARRIZO CREEK NEAR WARNER SPRINGS, CALIF.

LOCATION.—Near southern boundary of Valle de San Jose grant, at mouth of canyon, 2,000 feet above junction with Susanna Creek, and about 7½ miles southwest of Warner Springs, San Diego County.

DRAINAGE AREA.—4.9 square miles (measured on topographic maps).

ELEVATION.—About 2,800 feet above sea level.

RECORDS AVAILABLE.—January 24, 1913, to June 28, 1916. Discharge measurements only for years 1912–13 and 1915–16.)

GAGE.—Staff in two sections fastened to cottonwood tree on right bank at mouth of canyon.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of sand; shifting. Timber control installed June 16, 1913.

EXTREMES OF DISCHARGE.—1913–1915: Maximum stage not known, record incomplete; maximum mean daily discharge, February 21, 1914, 68 second-feet (estimated); minimum discharge estimated, 0.1 second-foot, each year.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths usually about twice a week. Discharge for days for which no readings were reported interpolated between discharge measurements or estimated by comparison with record of flow at station on West Fork of San Luis Rey River near Warner Springs. Records fair.

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Discharge measurements of Carrizo Creek near Warner Springs, Calif., for 1913–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Jan. 24	W. J. Isbell	0.91	0.3	Mar. 7	W. J. Isbell	2.62	1.2
30	do	.90	.4	10	do	2.63	1.0
Feb. 14	do	.90	.4	13	do	2.60	.8
19	F. C. Ebert	.95	.4	21	do	2.60	.8
25	W. J. Isbell	1.05	3.8	27	do	2.63	1.0
Mar. 13	do	.99	1.0	29	do	2.63	1.0
21	do	.94	.6	Apr. 10	do	2.63	.8
29	do	.95	.7	14	do	2.59	.4
Apr. 2	do	.94	.8	17	do	2.58	.4
11	do	.93	.4	24	F. C. Ebert	2.60	.8
18	do	.93	.4	30	W. J. Isbell	2.63	.9
22	do	.92	.6	May 8	do	2.62	.7
May 6	do	.91	.6	11	do	2.60	.4
10	F. C. Ebert	.86	.3	18	do	2.60	.5
16	W. J. Isbell	.85	.2	July 11	do	2.52	.06
22	do	.87	.2	Sept. 9	do	2.53	.2
30	do	.87	.2	Oct. 16	do	2.53	.1
June 5	do	.86	.2	Nov. 16	do	2.55	.2
9	do	.90	.2	Dec. 24	do	2.60	.8
14	F. C. Ebert	.93	.4	1915.			
20	W. J. Isbell	2.47	.0	Jan. 18	W. J. Isbell	2.57	.4
27	do	2.51	.4	Feb. 7	do	2.70	2.0
July 23	do	2.51	.2	13	do	2.93	9.2
26	do	2.52	.2	Mar. 3	do	3.05	17
Aug. 19	F. C. Ebert	2.53	[a] .2	6	F. C. Ebert	2.85	6.6
Sept. 2	W. J. Isbell	2.54	.3	13	W. J. Isbell	2.80	4.8
9	do	2.54	.2	26	do	2.69	2.4
22	do	2.58	.2	Apr. 7	do	2.67	2.1
23	do	2.58	.1	17	do	2.65	1.6
29	do	2.57	.2	May 8	do	2.80	10
Oct. 6	do	2.56	.1	14	R. W. Day	2.70	3.5
14	do	2.55	.1	June 28	W. J. Isbell	2.58	.6
21	do	2.58	.2	July 10	do	2.57	.3
29	do	2.57	.2	16	do	2.58	.3
Nov. 1	do	2.57	.2	28	do	2.58	.3
11	do	2.55	.2	Aug. 2	do	2.54	.2
17	do	2.55	.3	6	do	2.54	.3
22	do	2.54	.3	14	do	2.56	.3
25	do	2.56	.2	19	do	2.47	.1
Dec. 15	do	2.57	.2	Sept. 11	do	2.48	.1
29	do		.3	29	do	2.49	.2
1914.				Oct. 13	do	2.51	.2
Jan. 9	W. J. Isbell	2.55	.2	Nov. 13	do	2.57	.3
23	do	2.57	.4	1916.			
24	do	2.60	.4	Feb. 9	W. J. Isbell		13
30	do	2.62	.7	14	do		9.1
Feb. 3	do	2.64	.5	22	do		5.8
9	do	2.60	.6	Mar. 17	do	1.26	5.6
12	do	2.61	.6	28	do	1.32	5.6
24	do	2.76	4.0	Apr. 24	F. C. Ebert		8.8
26	Jas. Ridder	2.77	3.6	June 28	W. J. Isbell		1.2

[a] Estimated.

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Daily discharge, in second-feet, of Carrizo Creek near Warner Springs, Calif., for 1913–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.1	0.2	0.2	0.3	0.8	2.0	1.0	0.9	.....	.....	.....	.....
2	.1	.2	.2	.3	.8	1.5	1.0	.9	.....	.....	.....	.....
3	.1	.2	.2	.3	.5	1.2	.9	.8	.....	.....	.....	.....
4	.1	.2	.2	.2	.5	1.2	.9	.8	.....	.....	.....	.....
5	.1	.2	.2	.2	.5	1.2	.9	.8	.....	.....	.....	.....
6	.1	.2	.2	.2	.5	1.2	.8	.7	.....	.....	.....	.....
7	.1	.2	.2	.2	.6	1.2	.8	.7	.....	.....	.....	.....
8	.1	.2	.2	.2	.6	1.1	.8	.7	.....	.....	.....	.....
9	.1	.2	.2	.2	.6	1.1	.8	.6	.....	.....	.....	0.2
10	.1	.2	.2	.2	.6	1.0	.8	.5	.....	.....	.....	.....
11	.1	.2	.2	.2	.6	.9	.7	.4	.....	0.6	.....	.....
12	.1	.2	.2	.2	.6	.9	.6	.4	.....	.....	.....	.....
13	.1	.2	.2	.2	.6	.8	.5	.4	.....	.....	.....	.....
14	.1	.2	.2	.2	.6	.8	.4	.4	.....	.....	.....	.....
15	.1	.3	.2	.5	.6	.8	.4	.5	.....	.....	.....	.....
16	.1	.3	.2	1.0	.6	.8	.4	.5	.....	.....	.....	.....
17	.1	.3	.2	1.6	.6	.8	.4	.5	.....	.....	.....	.....
18	.2	.3	.2	2.2	1.0	.8	.6	.5	.....	.....	.....	.....
19	.2	.3	.2	3.0	33	.8	.6	.5	.....	.....	.....	.....
20	.2	.3	.2	1.5	64	.8	.7	.5	.....	.....	.....	.....
21	.2	.3	.2	.8	68	.8	.8	.5	.....	.....	.....	.....
22	.2	.3	.2	.4	39	.8	1.0	.5	.....	.....	.....	.....
23	.2	.3	.2	.4	12	.8	.9	.5	.....	.....	.....	.....
24	.2	.2	.2	.4	.4	.9	.8	.5	.....	.....	.....	.....
25	.2	.2	.3	1.5	3.8	.9	.8	.5	.....	.....	.....	.....
26	.2	.2	.3	32	3.6	1.0	.8	.5	.....	.....	.....	.....
27	.2	.2	.3	40	3.0	1.0	.8	.5	.....	.....	.....	.....
28	.2	.2	.3	7	2.5	1.0	.9	.5	.....	.....	.....	.....
29	.2	.2	.3	1.0	.....	1.0	.9	.5	.....	.....	.....	.....
30	.2	.2	.3	.7	.....	1.0	.9	.5	.....	.....	.....	.....
31	.2	.....	.3	.7	.....	1.0	.....	.5	.....	.....	.....	.....
1914–15.												
1	.1	.6	.2	.8	3	10	2.5	5	2.5	.5	.2	.1
2	.1	.6	.2	.8	10	14	2	4	2.5	.5	.2	.1
3	.1	.6	4	.5	5	17	2	3.5	2	.5	.2	.1
4	.1	.6	.6	.8	2	14	2	5	2	.5	.2	.1
5	.1	.6	.7	.8	2	10	2	13	2	.4	.3	.1
6	.1	.6	.7	.6	2	6.5	2	8	2	.4	.3	.1
7	.1	.4	.7	.4	2	6.5	2	9	2	.4	.3	.1
8	.1	.4	.7	.4	2	6.0	2	10	2	.4	.3	.1
9	.1	.3	1.0	.5	2	5.5	2	4	2	.3	.3	.1
10	.1	.3	1.5	.7	40	5	2	3.5	1.5	.3	.3	.1
11	.1	.2	1.0	.8	50	5	2	3.5	1.5	.3	.3	.1
12	.1	.2	.8	.7	17	5	2	3.5	1.5	.3	.3	.1
13	.1	.2	.8	.7	9	5	1.5	3.5	1.5	.3	.3	.1
14	.1	.2	.8	.6	9	5	1.5	3.5	1.5	.3	.3	.1
15	.1	.2	.8	.6	9	4.5	1.5	3.5	1.5	.3	.3	.1
16	.1	.2	.8	.5	8.5	4.5	1.5	3.5	1.5	.3	.2	.1
17	.1	.2	.8	.5	8	4	1.5	3.5	1	.3	.2	.1
18	.1	.2	.8	.4	7	4	1.5	3.5	1	.3	.1	.1
19	.1	.2	.8	.4	6.5	3.5	1.5	3.0	1	.3	.1	.1
20	.1	.2	.8	.4	6.5	3.5	1.5	3	.9	.3	.1	.1
21	.1	.2	.8	.5	6.5	3	2	3	.9	.3	.1	.2
22	.6	.2	.8	1.5	6.5	2.5	2	3	.8	.3	.1	.2
23	.1	.2	.8	1.5	6.5	2.5	2.5	3	.8	.3	.1	.2
24	.1	.2	.8	1.5	6.5	2.5	2.5	3	.8	.3	.1	.2
25	.2	.2	.5	2.0	8.5	2.5	2.5	3	.7	.3	.1	.2
26	.3	.2	.3	.8	6.5	2.5	2.5	2.5	.7	.3	.1	.2
27	.4	.2	.5	.6	5	2.5	2.5	2.5	.6	.3	.1	.2
28	.5	.2	.8	4	4	2.5	2.5	2.5	.6	.3	.1	.2
29	.6	.2	.8	35	.....	2.5	2.5	2.5	.6	.3	.1	.2
30	.6	.2	.5	20	.....	2.5	5	2.5	.6	.3	.1	.2
31	.6	.....	.3	7	.....	2.5	.....	2.5	.6	.2	.1	.....

NOTE.—For discharge June to September, 1914, see table of monthly discharge.

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Monthly discharge of Carrizo Creek near Warner Springs, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913–14.					1914–15.				
October	0.2	0.1	0.15	9.2	October	.6	0.1	0.20	12
November	.3	.2	.23	14	November	.6	.2	.30	18
December	.3	.2	.22	14	December	1.5	.2	.70	43
January	40	.2	3.56	219	January	35	.4	2.78	171
February	68	.5	8.58	477	February	50	2	8.95	497
March	2	.8	1.00	61	March	17	2.5	5.37	330
April	1	.4	.75	45	April	5	1.5	2.10	125
May	.9	.4	.56	34	May	13	2.5	4.16	256
June	.....	.....	.50	30	June	2.5	.6	1.35	80
July	.....	.....	.50	31	July	.5	.2	.34	21
August	.....	.....	.40	25	August	.3	.1	.19	12
September	.....	.....	.20	12	September	.2	.1	.13	8
The year	68	.....	1.34	971	The year	50	.1	2.17	1,570

SUSANNA CREEK NEAR WARNER SPRINGS, CALIF.

LOCATION.—Near southern boundary of Valle de San Jose grant, at highway bridge near mouth of canyon, 1,000 feet above junction with Carrizo Creek, and 7½ miles southwest of Warner Springs, San Diego County.

DRAINAGE AREA.—4.6 square miles (measured on topographic map).

ELEVATION.—About 2,800 feet above sea level.

RECORDS AVAILABLE.—February 1, 1913, to June 28, 1916. (Discharge measurements only 1912–13 and 1915–16.)

GAGE.—Staff bolted to upstream side of left bridge abutment.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of sand; shifting. July 14, 1913, a plank was placed horizontally between abutments of bridge for a control.

EXTREMES OF DISCHARGE.—1913–1915: Maximum stage not known, record incomplete; maximum mean daily discharge, February 21, 1914, and February 11, 1915, 70 second-feet (estimated); no flow for several months each year.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Gage read to hundredths usually about twice a week. Discharge for days for which no readings were reported interpolated between discharge measurements or estimated by comparison with record of flow at stations on Carrizo Creek and West Fork of San Luis Rey River near Warner Springs. Records fair.

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Discharge measurements of Susanna Creek near Warner Springs, Calif., for 1913–1916.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Feb. 1	W. J. Isbell	0.90	0.6	Mar. 29	W. J. Isbell	0.56	2.3
26	do	1.29	2.3	Apr. 10	do	.53	1.4
Mar. 13	do	1.30	2.8	14	do	.51	1.1
21	do	1.22	2.0	17	do	.51	1.0
24	do	1.24	2.6	24	F. C. Ebert	.53	1.8
Apr. 2	do	1.23	2.6	30	W. J. Isbell	.57	3.1
11	do	1.16	1.5	May 8	do	.53	2.0
18	do	1.15	2.3	11	F. C. Ebert	.51	1.4
22	do	1.12	1.3	18	W. J. Isbell	.51	1.2
May 6	do	1.05	.9	Aug. 21	F. C. Ebert	.51	.0
10	F. C. Ebert	1.03	.8	Dec. 21	W. J. Isbell	.50	.9
16	W. J. Isbell	.94	.6	31	do	.46	.4
22	do	.91	.5				
30	do	.90	.4	1915.			
June 5	do	.86	.3	Jan. 8	W. J. Isbell	.47	.4
9	do	.85	.2	18	do	.47	.4
14	F. C. Ebert	.87	.4	Feb. 7	do	67	5.8
20	W. J. Isbell	.05	.1	13	do	.99	18
27	do	.16	.4	Mar. 3	do	.80	10
Aug. 29	F. C. Ebert		.0	6	F. C. Ebert	.86	11
Sept. 23	W. J. Isbell		.0	13	W. J. Isbell	.79	10
29	do		.0	26	do	.66	5.5
Oct. 14	do		.0	Apr. 7	do	.59	4.3
21	do		.0	17	do	.56	4.2
29	do		.0	May 8	do	1.20	27
Nov. 1	do		.0	14	R. W. Day	.87	13
11	do		.0	June 28	W. J. Isbell	.54	2.6
17	do		.0	July 10	do	.50	1.2
25	do		.0	16	do	.47	.9
Dec. 29	do	.45	.2	28	do	.46	.7
				Aug. 2	do	.46	.4
1914.				6	do	.45	.7
Jan. 9	W. J. Isbell	.43	.2	14	do	.44	.5
23	do	.48	.7	Sept. 11	do	.39	.1
24	do	.48	.5	29	do	.40	.1
30	do	.67	3.3	Oct. 13	do	.40	.2
Feb. 3	do	.57	2.2	Nov. 13	do	.47	.6
9	do	.53	1.1				
12	do	.53	1.1	1916.			
24	do	.81	2.8	Feb. 9	W. J. Isbell		29
26	Jas. Ridder	.75	6.2	14	do		21
Mar. 7	W. J. Isbell	.59	2.4	22	do		14
10	do	.58	2.2	Mar. 17	do	1.93	8.7
13	do	.57	2.1	28	do	2.15	11
21	do	.54	1.4	Apr. 24	F. C. Ebert		4.2
27	do	.56	1.9	June 28	W. J. Isbell		1.4

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Daily discharge, in second-feet, of Susanna Creek near Warner Springs, Calif., for 1913–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	.....	.....	.....	0.2	2.8	4.0	2.0	3.0	0.9	.....	.....	.....
2	.....	.....	.....	.2	2.5	3.0	2.0	2.8	.8	.....	.....	.....
3	.....	.....	.....	.2	2.2	2.4	1.9	2.7	.8	.....	.....	.....
4	.....	.....	.....	.2	2.0	2.4	1.8	2.5	.8	.....	.....	.....
5	.....	.....	.....	.2	1.8	2.4	1.7	2.4	.8	.....	.....	.....
6	.....	.....	.....	.2	1.6	2.4	1.6	2.2	.7	.....	.....	.....
7	.....	.....	.....	.2	1.4	2.4	1.5	2.1	.7	.....	.....	.....
8	.....	.....	.....	.2	1.2	2.3	1.5	2.0	.7	.....	.....	.....
9	.....	.....	.....	.2	1.1	2.3	1.4	1.8	.7	.....	.....	.....
10	.....	.....	.....	.2	1.1	2.2	1.4	1.6	.6	.....	.....	.....
11	.....	.....	.....	.2	1.1	2.2	1.3	1.4	.6	.....	.....	.....
12	.....	.....	.....	.2	1.1	2.1	1.2	1.4	.6	.....	.....	.....
13	.....	.....	.....	.2	1.1	2.1	1.1	1.4	.6	.....	.....	.....
14	.....	.....	.....	.2	1.1	2.0	1.1	1.3	.5	.....	.....	.....
15	.....	.....	.....	.5	1.1	1.9	1.1	1.3	.5	.....	.....	.....
16	.....	.....	.....	1.0	1.1	1.8	1.1	1.2	.5	.....	.....	.....
17	.....	.....	.....	1.6	1.1	1.7	1.1	1.2	.5	.....	.....	.....
18	.....	.....	.....	2.2	1.5	1.6	1.2	1.2	.4	.....	.....	.....
19	.....	.....	.....	2.0	35	1.5	1.4	1.2	.4	.....	.....	.....
20	.....	.....	0.1	1.5	65	1.4	1.6	1.2	.4	.....	.....	.....
21	.....	.....	.1	.8	70	1.4	1.8	1.1	.3	.....	.....	.....
22	.....	.....	.1	.7	40	1.4	2.0	1.1	.3	.....	.....	.....
23	.....	.....	.2	.7	15	1.4	1.9	1.1	.3	.....	.....	.....
24	.....	.....	.2	.5	2.8	1.6	1.8	1.1	.3	.....	.....	.....
25	.....	.....	.2	1.5	4.5	1.7	2.0	1.0	.2	.....	.....	.....
26	.....	.....	.2	35	6.2	1.9	2.2	1.0	.2	.....	.....	.....
27	.....	.....	.2	45	5.5	1.9	2.4	1.0	.2	.....	.....	.....
28	.....	.....	.2	10	4.5	2.1	2.6	1.0	.2	.....	.....	.....
29	.....	.....	.2	7.0	.....	2.3	2.8	.9	.1	.....	.....	.....
30	.....	.....	.2	3.3	.....	2.2	3.1	.9	.1	.....	.....	.....
31	.....	.....	.2	3.0	.....	2.1	.....	.9	.....	.....	.....	.....
1914–15.												
1	.....	.....	.....	.4	8	10	6	15	6.5	2	0.4	0.2
2	.....	.....	.....	.4	25	12	5	12	6.5	2	.4	.2
3	.....	.....	.....	.4	16	10	5	11	6	2	.4	.2
4	.....	.....	.....	.4	11	10	5	15	6	2	.5	.2
5	.....	.....	.....	.4	9	11	5	30	6	1.5	.6	.2
6	.....	.....	.....	.4	7	11	5	20	6	1.5	.7	.2
7	.....	.....	.....	.4	6	11	4.5	23	6	1.5	.7	.2
8	.....	.....	.....	.4	5	12	4.5	27	5.5	1	.7	.1
9	.....	.....	.....	.4	5	13	4	15	5	1	.6	.1
10	.....	.....	.....	.4	55	13	4	10	5	1	.6	.1
11	.....	.....	.....	.4	70	12	4	9.5	4.5	1	.6	.1
12	.....	.....	.....	.4	26	11	4	10	4	1	.5	.1
13	.....	.....	.....	.4	18	10	6	12	3.5	1	.5	.1
14	.....	.....	.....	.4	18	10	7.5	13	3.5	.9	.5	.1
15	.....	.....	.....	.4	18	9	6	13	3.5	.9	.5	.1
16	.....	.....	.....	.4	11	9	5	12	3.5	.9	.5	.1
17	.....	.....	.1	.4	10	9	4	12	3	.9	.5	.1
18	.....	.....	.5	.4	10	8	4	11	3	.9	.4	.1
19	.....	.....	1.0	.4	9	8	4	11	3	.9	.4	.1
20	.....	.....	.9	.4	9	8	4	10	3	.8	.4	.1
21	.....	.....	.9	.4	9	7	5	10	2.5	.8	.4	.1
22	.....	.....	.8	1	8.5	6	5.5	9	2.5	.8	.4	.1
23	.....	.....	.8	1	8.5	6	6.5	9	2.5	.8	.4	.1
24	.....	.....	.7	4	8.5	6	6.5	9	2.5	.8	.4	.1
25	.....	.....	.6	3	24	5.5	6.5	9	2.5	.7	.3	.1
26	.....	.....	.4	2	11	5.5	6.5	8	2.5	.7	.3	.1
27	.....	.....	.4	1.5	9	6	6	7.5	2.5	.7	.3	.1
28	.....	.....	.4	5	8	6	6	7.5	2.5	.7	.3	.1
29	.....	.....	.4	50	.....	6.5	6.5	7	2.5	.7	.3	.1
30	.....	.....	.4	30	.....	6.5	15	7	2.5	.6	.3	.1
31	.....	.....	.4	8	.....	6.5	.....	6.5	.....	.5	.3	.....

NOTE.—Stream dry Oct. 1 to Dec. 19, 1913; July 1 to Dec. 19, 1914.

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Monthly discharge of Susanna Creek near Warner Springs, Calif., for 1913–1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1913–14.					**1914–15.**				
December	0.2	0	0.07	4.3	December	1	0.0	0.28	17
January	45	.2	3.87	238	January	50	.4	3.67	226
February	70	1.1	9.84	546	February	70	5	15.4	855
March	4.0	1.4	2.07	127	March	13	5.5	8.85	544
April	3.1	1.1	1.72	102	April	15	4	5.55	330
May	3.0	.9	1.52	93	May	30	6.5	12.3	756
June	.9	.1	.49	29	June	6.5	2.5	3.93	234
					July	2	.5	1.05	65
The year	70	0	1.58	1,140	August	.7	.3	.46	28
					September	.2	.1	.12	7
					The year	70	.0	4.23	3,099

NOTE.—No flow in months for which record is not given.

ESCONDIDO MUTUAL WATER CO.'S CANAL NEAR NELLIE, CALIF.

LOCATION.—In SW. ¼ NW. ¼ sec. 33, T. 10 S., R 1 E., just below intake on left bank of San Luis Rey River, 3½ miles above Rincon Indian Reservation, 4 miles southwest of Nellie, San Diego County, and about 15 miles northeast of Escondido.

RECORDS AVAILABLE.—October 1, 1896, to September 30, 1918, except that there are no records for the years 1901–2 and 1903–4.

DISCHARGE.—November, 1896, to August, 1909, a weir in the wooden flume, about 200 feet below the sand box at the intake, was used to determine discharge. The weir consisted of a 1-inch board, held in position by guides fastened to the sides of the flume. Boards of widths ranging from 6 to 12 inches, were used during this period. The head on the weir was read by holding a foot-rule on the crest. January 1, 1910, to August 1, 1914, except December 1, 1912, to May 4, 1913, the weir was at the lower end of the sand box. The crest length was 6 feet and there was one incomplete end contraction. The head was measured from the top of a stake set level with the crest and 2 feet upstream. December 1, 1912, to May 4, 1913, observations were made over a 4 by 6-inch timber, laid on its 4-inch face, in a straight section of the concrete canal opposite the zanjero's house at the tunnel camp about 2 miles below the intake. The length of the weir was 65 inches and the head was measured from the top of a stake set level with the crest and 4 feet upstream. October 29, 1915, the wooden weir board was replaced by a concrete slab with a steel plate for the crest. The length of crest was not changed.

In March, 1916, Mr. E. R. Bowen installed a weir at the south portal of tunnel No. 2 and developed rating curves for the various crude weirs which had been in use. The accompanying tables of daily and monthly discharge give the recomputed discharges and supersede those published in previous water-supply papers.

COOPERATION.—Record as published was furnished by J. B. Lippincott, Los Angeles, Calif.

The canal, which is 5.6 miles long, consists of flume, ditch, and tunnel sections constructed through a very rough, mountainous country. It discharges into a reservoir about 6 miles northeast of Escondido. The dam is 76 feet high and 380 feet long, is of the usual rock-fill type, and is faced with redwood planks. The reservoir (capacity of 3,120 acre-feet) supplies water for irrigation and domestic uses at Escondido and vicinity.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1896–97.								
1	1.2	4.25	6.2	[a] 8.6	[b] 31.2	[a] 31.2	.....	8.6
2	1.2	3.6	6.2	8.6	[a] 35.0	[a] 40.8	.....	8.6
3	.85	3.1	5.5	7.7	[a] 35.5	[a] 37.2	.....	8.6
4	.85	3.1	5.5	[a] 7.7	[a] 35.0	[a] 35.0	.....	8.6
5	.85	3.1	5.5	6.95	[a] 33.1	[a] 40.8	.....	6.95
6	.85	3.6	5.5	6.95	[a] 36.0	[a] 38.0	35.0	6.95
7	.85	3.6	5.5	6.2	[a] 37.0	[b] 35.0	[a] 29.2	5.5
8	.85	3.6	5.5	6.2	[c] 31.2	.....	[a] 31.2	5.5
9	1.05	3.6	4.9	6.2	[a] 33.1	[c] 31.2	[a] 31.2	4.25
10	1.05	4.9	4.9	[a] 9.1	[a] 26.3	[a] 33.1	[a] 33.1	4.25
11	1.2	6.2	5.5	[a] 19.5	[a] 23.4	[a] 33.1	[a] 29.2	4.25
12	1.2	5.2	5.5	[a] 19.5	[a] 23.4	[a] 37.0	[a] 33.1	4.25
13	1.2	4.25	6.2	23.4	[a] 23.4	[a] 38.9	[a] 37.0	4.25
14	1.65	3.6	5.5	.....	[a] 23.4	[a] 37.0	[a] 35.0	3.1
15	1.65	3.1	5.5	.....	[a] 22.0	[a] 37.0	[a] 31.2	3.1
16	1.4	3.6	15.6	.....	[a] 20.4	[a] 35.0	[a] 33.2	3.1
17	1.65	3.1	10.2	13.8	[a] 21.9	[a] 31.2	[a] 27.2	3.1
18	1.85	3.1	9.4	21.4	[b] 31.2	[b] 29.2	[a] 27.2	3.1
19	1.65	3.1	8.6	[a] 25.4	.....	[a] 24.4	[a] 25.4	3.1
20	2.05	3.1	6.95	[a] 25.4	.....	[a] 15.6	[a] 25.4	3.1
21	2.8	3.1	5.5	[a] 26.8	.....	[a] 15.6	[a] 19.5	2.05
22	3.1	3.1	5.5	[a] 24.1	.....	[a] 15.6	[a] 15.6	.....
23	3.1	3.1	5.5	[a] 22.5	.....	[a] 15.6	12.0	.....
24	2.55	4.25	5.5	[a] 22.5	[a] 31.2	[a] 15.6	12.0	.....
25	2.55	19.4	4.25	[a] 22.5	[a] 35.0	[a] 15.6	12.0	.....
26	2.55	.....	4.25	[a] 22.5	[a] 35.0	[a] 15.6	12.0	.....
27	8.6	8.6	4.25	[a] 23.0	[a] 35.0	[a] 5.5	12.0	.....
28	12.0	7.7	[a] 10.6	[a] 22.0	[a] 33.1	[a] 5.5	12.0	.....
29	9.4	7.7	[a] 21.4	[a] 27.3	.....	[a] 5.5	12.0	.....
30	4.25	6.2	[a] 11.1	[a] 32.2	.....	[a] 5.5	12.0	.....
31	4.25	.....	[a] 9.0	[a] 35.0	.....	.....	.....	.....

	Dec.	Jan.	Feb.	Mar.	Apr.		Dec.	Jan.	Feb.	Mar.	Apr.
1897–98.						**1897–98.**					
1	.....	6.2	[a] 18.5	[a] 10.2	[a] 13.8	16	8.6	[a] 20.8	[a] 12.0	[a] 20.0	[a] 8.15
2	4.25	5.5	[a] 18.5	[a] 10.2	[a] 13.1	17	6.95	[a] 28.3	[a] 15.2	[a] 23.9	11.6
3	4.25	10.2	[a] 18.5	[a] 10.2	[a] 12.2	18	12.0	[a] 29.2	[a] 25.3	[a] 23.8	.....
4	4.25	10.2	[a] 17.5	[a] 10.0	[a] 11.8	19	.....	[a] 21.4	[a] 18.5	[a] 29.2	.....
5	4.25	6.95	[a] 17.5	[a] 9.8	[a] 11.1	20	12.0	[a] 20.4	[a] 15.2	[a] 31.2	.....
6	3.6	9.4	[a] 16.1	[a] 9.4	[a] 10.4	21	12.0	[a] 16.2	[a] 14.0	[a] 23.4	.....
7	3.6	9.4	[a] 17.5	[a] 9.8	[a] 10.2	22	12.0	[a] 14.7	[a] 12.4	[a] 19.0	.....
8	3.6	[a] 35.6	[a] 37.0	[a] 10.2	[a] 10.2	23	12.0	[a] 30.2	[a] 11.6	[a] 21.0	.....
9	3.1	.....	[a] 25.3	[a] 9.8	[a] 10.2	24	12.0	[a] 34.0	[a] 11.1	[a] 17.3	.....
10	3.1	12.0	[a] 21.4	[a] 29.2	[a] 10.2	25	10.2	[a] 27.3	[a] 11.1	[a] 15.6	.....
11	3.1	[b] 12.0	[a] 20.0	[a] 35.0	[a] 10.2	26	10.2	[a] 21.4	[a] 11.1	[a] 30.2	.....
12	3.1	.....	[a] 16.6	[a] 23.4	[a] 10.2	27	10.2	[a] 15.7	[a] 11.1	[a] 26.3	.....
13	3.1	8.6	[a] 14.2	[a] 19.2	8.1	28	8.6	[a] 21.4	[a] 10.4	[a] 24.1	.....
14	3.1	[a] 20.4	[a] 12.7	[a] 21.4	7.7	29	8.6	[a] 24.4	.....	[a] 20.7	.....
15	.....	[a] 21.4	[a] 12.0	[a] 25.8	7.7	30	8.6	[a] 21.4	.....	[a] 17.0	.....
						31	6.95	[a] 17.5	.....	[a] 15.2	.....

[a] Mean of a. m. and p. m. readings. [b] No flow in p. m.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.
1898–99.						1898–99.					
1	.....	.....	3.6	6.6	12.9	16	.....	6.95	8.6	4.25	4.55
2	.....	.....	21.4	6.2	11.1	17	.....	6.95	8.1	a33.1	4.25
3	.....	.....	35.0	5.85	10.6	18	.....	6.95	6.95	a29.2	.....
4	.....	.....	15.6	5.5	10.2	19	.....	6.6	6.6	a17.6	.....
5	.....	.....	17.5	4.9	9.8	20	.....	6.2	6.2	a26.4	.....
6	.....	.....	12.0	4.25	9.4	21	.....	5.85	5.85	a33.1	.....
7	.....	.....	12.0	4.25	8.6	22	.....	5.5	5.5	a23.4	.....
8	.....	.....	12.0	4.25	7.7	23	.....	3.6	5.5	a16.6	.....
9	.....	.....	11.1	4.25	7.3	24	.....	4.25	19.4	13.8	.....
10	.....	.....	10.6	4.25	6.95	25	.....	4.25	12.0	12.9	.....
11	.....	.....	10.2	4.25	6.6	26	.....	4.25	8.6	22.5	5.5
12	.....	.....	9.4	4.25	6.2	27	.....	3.95	7.7	13.8	4.9
13	.....	.....	9.4	4.25	5.5	28	.....	3.6	6.95	12.9	.....
14	.....	.....	9.4	4.25	5.2	29	.....	3.6	.....	.....	.....
15	.....	.....	9.4	4.25	4.9	30	.....	3.6	.....	16.6	.....
						31	.....	3.6	.....	13.8	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1899–1900.						1899–1900.					
1	5.2	6.95	3.95	4.25	7.3	16	7.7	6.6	4.55	3.95	4.9
2	4.9	6.95	4.25	4.25	6.95	17	6.95	6.6	4.55	3.6	.....
3	a8.75	6.95	4.25	5.5	6.2	18	6.95	6.2	4.25	3.35	.....
4	6.95	6.95	a6.42	5.5	10.2	19	6.95	6.95	4.55	3.1	.....
5	a19.5	7.3	12.0	5.5	a19.6	20	6.95	6.6	4.55	3.1	.....
6	a13.1	7.3	7.7	5.2	a29.2	21	6.95	6.6	4.55	12.0	.....
7	a11.6	6.95	6.95	5.5	15.6	22	6.95	6.2	4.9	25.4	.....
8	10.2	6.95	6.2	6.95	12.0	23	6.95	5.5	a10.3	13.8	.....
9	9.8	6.95	5.5	6.95	8.6	24	6.95	4.55	10.2	10.2	.....
10	9.4	6.95	5.5	6.2	6.95	25	6.95	4.55	5.5	7.3	.....
11	8.1	6.95	5.2	5.5	12.9	26	7.3	4.25	5.2	6.95	.....
12	7.7	6.95	4.55	4.9	15.6	27	7.3	3.95	4.9	7.7	.....
13	7.7	6.95	4.55	4.55	10.2	28	7.3	3.60	4.55	a17.7	.....
14	7.7	6.95	4.55	4.9	8.6	29	6.95	.....	4.55	a13.4	.....
15	7.7	6.95	a12.1	4.25	6.95	30	6.95	.....	4.25	9.4	.....
						31	6.95	.....	4.25	.....	.....

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1900–1901.							1900–1901.						
1	.....	3.6	.....	a21.4	.....	19.4	16	1.85	.....	5.5	33.1	19.4	.....
2	.....	3.6	.....	a27.3	.....	18.4	17	10.2	.....	5.5	.....	19.4	.....
3	.....	3.35	.....	a27.3	.....	17.5	18	15.6	.....	5.5	.....	18.4	.....
4	.....	3.35	.....	31.2	.....	21.4	19	15.6	.....	5.5	.....	17.5	.....
5	.....	3.35	3.1	33.1	.....	19.4	20	12.0	.....	8.6	.....	17.5	.....
6	.....	3.35	12.0	.....	.....	18.4	21	10.2	.....	a20.4	.....	19.4	.....
7	.....	3.35	25.4	.....	.....	20.5	22	21.4	.....	a17.5	.....	19.4	.....
8	.....	3.1	.....	.....	.....	17.5	23	21.4	.....	14.7	.....	18.4	.....
9	.....	3.1	15.6	.....	11.1	16.6	24	10.2	.....	12.9	.....	17.5	.....
10	.....	3.1	12.0	.....	17.5	15.6	25	6.95	.....	23.4	.....	16.6	.....
11	.....	.....	10.2	.....	23.4	14.7	26	5.5	.....	25.4	.....	16.1	.....
12	.....	.....	8.6	12.0	25.4	.....	27	5.2	.....	17.5	.....	15.6	.....
13	.....	.....	6.95	23.4	23.4	.....	28	3.6	.....	17.5	.....	14.7	.....
14	.....	.....	6.2	31.2	21.4	.....	29	3.6	.....	15.6	.....	13.8	.....
15	.....	.....	5.5	33.1	19.4	.....	30	4.25	.....	12.0	.....	20.5	.....
							31	.....	.....	10.6	.....	20.5	.....

a Mean of a. m. and p. m. readings.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1913—Continued.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1902–3.							
1			5.5	a10.6	a16.1	a15.6	a27.2
2			5.5	a15.6	a13.6		a10.2
3			5.5	a27.2	a13.8	a15.6	a10.2
4			5.5	a5.5	a14.7	a27.2	a10.2
5		2.0	5.5	a27.2	a16.5	a27.2	a10.2
6			5.5	a27.2	a27.2	a27.2	a12.0
7		2.0	5.5	a25.3	a27.2	a27.2	a12.0
8			5.5	a26.3	a27.2	a27.2	a12.0
9			5.5	a27.2	a27.2	a27.2	12.0
10			3.6	a27.2	a24.8	a27.2	
11		4.5	3.6	a27.2	a24.3	a27.2	
12			3.6	a27.2	a24.8	a27.2	
13		9.0	3.6	a26.3	a23.8	a27.2	
14			3.6	a21.4	a22.2	a27.2	
15			3.6	a24.4	a20.5	5.5	
16			3.6	a23.4	a20.0	5.5	
17			3.6	a23.4	a25.3		
18			3.6	a23.4	a21.4		
19	4.0		3.6	a23.9	a18.0		
20			3.6	a23.9	a16.1		
21	6.5		3.6	a23.9	a16.1		
22			3.6	a23.9	a15.2		
23			3.6	a22.4	a14.2		
24			3.6	a24.4	a21.4	a15.6	
25			a4.9	a23.9	a27.2	a27.2	
26			a6.6	a21.9	a27.2	a27.2	
27			a5.85	a19.5	a23.9	a27.2	
28			a11.6	a17.0	a20.0	a27.2	
29	2.5		a21.4		a18.0	a27.2	
30			a10.7		a19.0	a25.3	
31			a12.9		a27.2		

Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.
1904–5.				1904–5.				1904–5.			
1	a27.8	a27.2	a27.2	11	a22.4	a27.2	a27.2	21		a27.2	
2	a25.8	a27.2		12	a26.3	a27.2	a27.2	22		a27.2	
3	a27.2	a27.2		13	a24.8	a27.2	a27.2	23		a27.2	
4	a28.2	a27.2	a15.6	14	a26.3	a27.2	a27.2	24	15.6	a27.2	
5	a27.2	a27.2	a26.3	15	a24.4	a27.2	a27.2	25	a22.5	a27.2	
6	a26.8	a27.2	a27.2	16		a27.2		26	a22.5	a27.2	
7	a27.2	a27.2	a27.2	17		a27.2		27	a22.5	a27.2	
8	a26.8	a27.2	a25.8	18		a27.2		28	a26.3	a27.2	
9	a25.8	a27.2	a27.2	19		a27.8		29	a27.2	a27.2	
10	a23.0	a27.2	a27.2	20		a27.2		30	a27.8	a27.2	
								31	a27.2		

Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.
1905–6.				1905–6.				1905–6.			
1		a12.4	a27.2	11		a23.4	a15.6	21	a21.4	a27.2	
2		a12.6	a26.8	12		a27.2		22	a25.4	a27.2	
3		a10.2	a24.8	13		a27.2		23	a24.4	a27.2	
4		a10.2		14		a24.4		24	a19.5	a25.8	
5		a11.1		15				25	a17.6	a24.6	
6		a12.0		16		a27.2		26	a15.6	a23.4	
7		a24.4	a11.1	17	a8.6	a27.2		27	a15.2	a21.0	
8		a23.4	a10.2	18	a8.6	a27.2		28	a14.7	a25.8	
9		a26.3	a10.2	19		a27.2		29	a13.8		
10		a19.4	a15.6	20	a15.6	a27.2		30	a13.4		
								31	a12.9		

a Mean of a. m. and p. m. readings.

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Daily discharge, in second-feet, at Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	May.	June.	July.
1906–7.							
1			a 12.4			10.2	5.5
2			a 14.2	a 24.3		10.2	5.5
3			a 14.7	a 24.3		10.2	5.5
4			a 15.2			8.6	5.5
5			a 16.6	a 17.7		8.6	5.5
6	3.1		a 14.7	b 21.4		8.6	5.5
7	3.6		a 14.2			8.6	
8	3.1		a 13.4			8.6	
9	3.6		a 14.7			10.2	
10	7.7		a 14.7			10.2	
11	3.1		a 15.6			10.2	
12	3.6		a 18.5		4.25	8.6	
13	3.6		a 20.4		4.25	8.6	
14	3.1				4.25	8.6	
15	3.1		25.4		4.25	8.6	
16	3.6		a 24.3		5.5	8.6	
17	3.1		a 24.3		5.5	8.6	
18	3.1		a 24.3		5.5	8.6	
19	3.1		a 22.4		6.95	8.6	
20	3.6		a 20.4		6.95	8.6	
21	3.1		a 19.0		6.95	7.7	
22	3.6		a 16.6		6.95	7.7	
23	3.6		a 16.6		6.95	7.7	
24			a 16.6		7.7	7.7	
25			a 16.6		7.7	7.7	
26			b 17.5		8.6	6.95	
27			a 19.4		8.6	6.95	
28		a 9.0	a 19.4		9.4	6.95	
29		a 9.0	a 24.3		9.4	6.95	
30		a 14.2	a 24.3		10.2	6.2	
31			19.4		10.2		

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1			8.6	a 12.9	a 12.0	a 5.5	a 12.0	a 11.6	a 7.7			
2			8.1	a 12.4	a 12.0	a 5.5	a 12.0	a 12.0	a 7.7			
3			8.1	a 12.0		a 5.5	a 12.0	a 12.0	a 7.7			
4			8.1	a 12.0			a 12.0	a 12.0	a 7.7			
5			8.6	a 11.8	a 5.5		a 12.0	a 12.0				
6			8.6	a 11.3	a 5.5		a 12.0	a 12.0				
7			9.4	a 10.6	a 5.5	a 5.5	a 12.0	a 12.0				
8			9.4	a 10.2	a 5.5	a 5.5	a 12.0	a 11.1				
9			4.25	a 10.2		a 5.5	a 12.0	a 11.1				
10			8.6	a 10.2		a 5.5	a 12.0	a 11.1				
11			9.4	a 10.0	a 5.5	a 5.5	a 12.0	a 11.1				
12			9.4	a 9.8	a 5.5	a 5.5	a 12.0	a 11.1				
13			9.4	a 10.2	a 5.5	a 5.5	a 12.0	a 10.2				
14			9.4	a 10.2	a 5.5	a 5.5	a 12.0	a 10.2				
15			10.2	a 14.7	a 5.5	a 5.5	a 12.0	a 10.2				
16			9.4	a 14.7	a 5.5	a 5.5	a 12.0	a 11.1				
17			9.8	a 14.7	a 5.5	a 5.5	a 12.0	a 10.2				
18			9.4	a 14.2	a 5.5	a 5.5	a 12.0	a 10.2				
19			10.2	a 13.8	a 5.5	a 5.5	a 12.0	a 10.2				
20			10.2	a 13.8	a 5.5	a 9.8	a 12.0	a 8.6				
21			10.2	a 13.4	a 5.5	a 9.8	a 12.0	a 8.6				
22			a 10.2	a 12.9	a 5.5	a 9.8	a 12.0	a 8.6				
23			a 10.2	b 12.9	a 5.5	a 9.8	a 12.0	a 8.6				
24			a 10.2		a 5.5	a 10.2	a 12.0	a 8.6				
25			a 10.2		a 5.5	a 12.0	a 12.0	a 8.6				
26		9.0	a 10.2		a 5.5	a 8.6	a 12.0	a 8.6				
27		9.0	a 10.2		a 5.5	a 12.0	a 12.0	a 8.6				
28		9.0	a 10.2		a 5.5	a 12.0	a 12.0	a 8.6				
29		8.6	a 10.2	a 12.0	a 5.5	a 12.0	a 12.0	a 8.6				
30		8.6	a 13.4	a 12.6		a 12.0	a 12.0	a 8.6				
31			a 12.9	a 12.0		a 12.0		a 7.7				

a Mean of a. m. and p. m. readings.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	.....	.....	6.2	6.2	23.4	19.4	17.5	10.2	10.2	2.55	.....	.....
2	.....	.....	6.2	5.5	23.4	19.4	18.4	10.2	10.2	2.05	.....	.....
3	.....	.....	6.95	6.2	23.4	19.4	18.4	10.2	10.2	2.05	.....	.....
4	.....	.....	6.95	6.2	.....	19.4	[a] 16.6	10.2	8.6	2.55	.....	.....
5	.....	.....	6.95	6.2	23.4	21.4	[a] 18.4	10.2	7.7	2.55	.....	.....
6	.....	.....	6.95	6.2	15.6	21.4	[a] 19.0	10.2	6.95	2.55	.....	.....
7	.....	.....	8.6	6.2	15.6	21.4	[a] 18.4	10.2	6.95	2.05	.....	.....
8	.....	.....	6.95	6.2	.....	21.4	[a] 19.4	10.2	6.95	2.05	.....	.....
9	.....	.....	6.95	10.2	21.4	23.4	[a] 19.0	10.2	6.2	2.05	.....	.....
10	.....	.....	6.2	8.6	21.4	23.4	[a] 19.0	10.2	6.2	2.05	.....	.....
11	.....	.....	6.2	8.6	.....	13.8	[a] 18.4	10.2	6.2	2.05	.....	.....
12	.....	.....	6.2	11.1	.....	23.4	[a] 18.4	10.2	6.2	2.05	.....	.....
13	.....	.....	6.2	11.1	.....	23.4	[a] 18.4	10.2	6.2	2.05	.....	.....
14	.....	.....	6.2	11.1	.....	21.4	[a] 10.2	10.2	6.2	2.05	.....	.....
15	.....	.....	6.2	16.6	.....	21.4	[a] 10.2	10.2	6.2	2.05	.....	.....
16	.....	.....	10.2	19.4	.....	23.4	[a] 10.2	10.2	6.2	2.05	.....	.....
17	.....	.....	8.6	12.0	.....	21.4	[a] 10.2	10.2	6.2	2.05	.....	.....
18	.....	.....	8.6	12.9	.....	.....	[a] 10.2	10.2	6.2	2.05	.....	.....
19	.....	.....	6.95	12.9	.....	.....	[a] 10.2	10.2	6.2	2.05	.....	.....
20	.....	.....	6.2	12.9	.....	.....	[a] 10.2	10.2	5.85	2.05	.....	.....
21	.....	.....	6.2	12.9	.....	.....	[a] 10.2	10.2	5.85	2.05	.....	.....
22	.....	.....	6.2	.....	.....	.....	[a] 10.2	10.2	5.5	2.05	.....	.....
23	.....	.....	6.2	.....	.....	.....	[a] 10.2	10.2	4.9	2.05	.....	.....
24	.....	6.95	6.2	.....	.....	[a] 11.2	[a] 10.2	10.2	4.25	2.05	.....	.....
25	.....	6.95	6.2	.....	.....	14.7	.....	10.2	4.25	.....	.....	.....
26	.....	.....	6.2	.....	8.6	14.7	10.2	10.2	3.6	.....	.....	.....
27	.....	6.2	6.2	.....	12.0	.....	10.2	10.2	3.6	.....	.....	.....
28	.....	6.2	6.2	14.2	12.0	.....	10.2	10.2	3.1	.....	.....	.....
29	.....	6.2	6.2	19.4	.....	.....	10.2	10.2	3.1	.....	.....	.....
30	.....	6.2	6.2	15.6	.....	14.7	10.2	10.2	3.1	.....	.....	.....
31	.....	.....	6.2	15.6	.....	15.6	.....	10.2	.....	.....	.....	.....
1909–10.												
1	.....	.....	.....	.....	11.7	17.3	6.4	7.5	.....	1.2	1.2	.....
2	.....	.....	.....	.....	11.7	17.3	6.4	7.5	3.0	1.2	.8	.....
3	.....	.....	.....	.....	11.7	17.3	6.4	7.5	3.0	1.2	.8	.....
4	.....	.....	.....	.....	11.7	.....	6.4	7.5	3.0	.8	.8	.....
5	.....	.....	.....	.....	11.7	.....	6.4	7.5	3.0	.8	.8	.....
6	.....	.....	.....	.....	11.7	.....	6.4	7.5	2.3	.8	.8	.....
7	.....	.....	.....	.....	11.7	17.3	6.4	7.5	2.3	.8	.8	.....
8	.....	.....	.....	6.4	11.7	17.3	6.4	7.5	1.7	.8	1.2	.....
9	.....	.....	.....	6.4	12.3	14.4	6.4	7.5	1.7	.8	1.2	.....
10	.....	.....	.....	7.5	12.3	14.4	6.4	7.5	1.7	.8	1.2	.....
11	.....	.....	.....	7.5	12.3	17.3	6.4	7.5	1.7	.8	1.2	.....
12	.....	.....	.....	12.3	12.3	17.3	6.4	7.5	1.2	.8	.....	.....
13	.....	.....	.....	13.0	12.3	17.3	6.4	7.5	1.2	.8	.....	.....
14	.....	.....	.....	13.0	13.7	17.3	6.4	7.5	1.2	.8	.....	.....
15	.....	.....	.....	11.7	13.7	17.3	6.4	7.5	1.7	1.2	.....	.....
16	.....	.....	.....	.....	15.8	17.3	6.4	7.5	2.3	1.2	.....	.....
17	.....	.....	.....	11.7	15.1	17.3	6.4	7.5	2.3	1.2	.....	.....
18	.....	.....	.....	11.7	16.5	17.3	6.4	7.5	2.3	.....	.....	.....
19	.....	.....	.....	11.7	16.5	17.3	6.4	7.5	1.7	.....	.....	.....
20	.....	.....	.....	11.7	17.3	17.3	6.4	7.5	1.7	.....	.....	.....
21	.....	.....	.....	11.7	17.3	17.3	6.4	7.5	1.7	.....	.....	.....
22	.....	.....	.....	11.7	17.3	17.3	6.4	5.4	1.7	.....	.....	.....
23	.....	.....	.....	11.7	17.3	6.4	6.4	5.4	1.7	.....	.....	.....
24	.....	.....	.....	11.7	17.3	6.4	6.4	5.4	1.7	.....	.....	.....
25	.....	.....	.....	11.7	17.3	6.4	6.4	5.4	1.7	.....	.....	.....
25	.....	.....	.....	11.7	17.3	6.4	6.4	5.4	1.2	.....	.....	.....
26	.....	.....	.....	11.7	17.3	6.4	7.5	5.4	1.2	.....	.....	.....
27	.....	.....	.....	11.7	17.3	6.4	7.5	5.4	1.2	.....	.....	.....
28	.....	.....	.....	11.7	17.3	6.4	7.5	4.6	1.2	.....	.....	.....
29	.....	.....	.....	11.7	.....	6.4	7.5	4.6	1.2	.....	.....	.....
30	.....	.....	.....	11.7	.....	6.4	7.5	.....	1.2	.....	.....	.....
31	.....	.....	.....	11.7	.....	6.4	.....	.....	.....	.....	.....	.....

[a] Mean of a. m. and p. m. readings.

NOTE.—Gage was read once each day unless otherwise indicated. Canal was dry on days when no discharge is given.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1910–11.							1910–11.						
1	2.3	3.7	.....	.....	20.3	16.5	16	2.6	12.3	19.5	20.3	20.3	8.6
2	2.3	3.7	.....	20.3	20.3	15.1	17	2.3	15.1	19.5	20.3	20.3	8.6
3	2.3	3.7	.....	20.3	20.3	13.7	18	2.3	17.3	19.5	20.3	20.3	8.6
4	2.3	3.7	.....	19.5	20.3	13.7	19	2.3	15.1	19.5	20.3	20.3	7.5
5	2.3	3.7	.....	20.3	20.3	13.7	20	3.0	13.7	19.5	20.3	20.3	7.5
6	2.3	3.7	.....	.....	20.3	13.7	21	3.0	12.3	19.5	20.3	20.3	6.4
7	2.3	3.0	.....	17.3	20.3	12.3	22	3.7	11.0	19.5	20.3	.....	5.4
8	2.3	3.0	.....	20.3	20.3	11.0	23	3.7	11.0	19.5	20.3	17.3	4.6
9	2.3	.....	.....	20.3	20.3	11.0	24	3.7	11.0	19.5	20.3	19.5	4.6
10	2.3	.....	.....	20.3	20.3	9.8	25	3.7	13.7	20.3	20.3	19.5	.....
11	2.3	.....	.....	20.3	20.3	9.8	26	3.7	17.3	20.3	20.3	19.5	.....
12	2.3	.....	.....	20.3	20.3	8.6	27	3.7	19.5	20.3	20.3	20.3	.....
13	2.3	.....	.....	20.3	20.3	7.5	28	3.7	.....	20.3	20.3	20.3	.....
14	2.6	12.3	.....	20.3	20.3	8.6	29	3.7	.....	.....	20.3	19.5	.....
15	2.6	.....	17.3	20.3	20.3	9.8	30	3.7	13.7	.....	20.3	18.0	.....
							31	.....	17.3	.....	20.3	.....	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1911–12.							1911–12.						
1	11.0	5.9	11.0	14.4	23.4	6.4	16	6.4	5.4	.....	.....	24.2	.....
2	12.3	5.4	11.0	14.4	24.2	.....	17	5.4	5.4	.....	.....	22.6	.....
3	11.7	5.0	11.0	15.8	24.2	.....	18	11.0	5.0	.....	.....	25.8	.....
4	11.0	4.6	11.7	.....	24.2	.....	19	7.5	4.8	.....	.....	25.8	.....
5	8.6	5.4	13.0	21.8	24.2	.....	20	6.4	4.6	11.7	.....	25.8	.....
6	8.6	5.4	.....	22.6	24.2	.....	21	6.4	4.1	13.7	.....	25.8	.....
7	8.6	6.5	.....	22.6	25.8	.....	22	6.4	4.8	14.4	.....	25.8	.....
8	8.6	7.5	15.1	22.6	25.8	.....	23	5.4	4.6	14.4	.....	25.8	.....
9	8.6	7.5	18.0	24.2	24.2	.....	24	5.4	4.6	14.4	.....	25.8	.....
10	8.6	6.4	.....	24.2	24.2	.....	25	5.4	4.1	14.4	.....	25.8	.....
11	11.0	6.4	.....	25.8	24.2	.....	26	8.6	4.1	14.4	.....	15.1	.....
12	9.8	6.4	.....	.....	24.2	.....	27	8.6	4.6	.....	.....	12.3	.....
13	7.5	5.4	.....	.....	24.2	.....	28	7.5	4.6	14.4	.....	11.0	.....
14	6.4	5.4	.....	.....	24.2	.....	29	7.5	4.6	14.4	.....	8.6	.....
15	6.4	5.4	.....	.....	24.2	.....	30	6.4	.....	14.4	22.6	6.4	.....
							31	5.9	.....	14.4	.....	.....	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1912–13.							1912–13.						
1	4.9	3.5	6.1	20.8	18.6	2.5	16	2.5	.....	6.7	20.0	12.8	.....
2	3.8	3.5	6.1	20.0	21.5	1.9	17	2.5	.....	6.7	19.3	12.8	.....
3	3.5	.....	6.1	19.3	18.6	1.9	18	2.5	.....	6.7	19.3	.....	.....
4	2.8	.....	6.1	21.5	17.1	1.9	19	2.5	12.8	7.4	19.3	17.5	.....
5	2.3	.....	11.3	21.5	16.0	.....	20	2.5	10.7	8.0	23.1	13.5	.....
6	2.1	.....	13.8	21.5	15.6	.....	21	3.5	8.7	14.2	20.0	11.3	.....
7	2.1	.....	14.2	21.5	14.9	.....	22	3.5	8.7	17.5	20.0	11.3	.....
8	2.3	.....	17.9	21.5	14.2	.....	23	3.5	8.7	12.8	23.1	10.0	.....
9	2.3	.....	14.9	21.5	13.1	.....	24	3.5	8.0	18.6	23.1	9.3	.....
10	2.3	.....	11.7	20.0	12.0	.....	25	3.5	7.7	.....	22.3	9.0	.....
11	2.5	.....	10.0	20.0	10.0	.....	26	3.5	7.4	.....	22.3	8.4	.....
12	2.5	.....	8.7	22.3	10.0	.....	27	3.5	7.4	.....	22.3	7.4	.....
13	2.5	.....	7.7	22.3	10.0	.....	28	3.5	6.7	19.3	21.5	6.1	.....
14	2.5	.....	7.4	20.8	14.9	.....	29	3.5	6.1	.....	21.5	6.1	.....
15	2.5	.....	7.1	20.0	12.8	.....	30	3.5	6.1	.....	20.0	6.1	.....
							31	3.5	6.1	.....	20.0	.....	.....

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1				7.5	36.6		36.6	24.2	8.6			
2				6.4	36.6		36.6	24.2	9.8			
3				5.9	40.4		36.6	29.7	9.8			
4				5.4	36.6	24.2	[a] 15.2	29.7	7.5			
5			2.8	5.0	33.5	30.4	18.0	29.0	6.9			
6			2.8	4.6	30.4	38.1	12.3	27.4	7.5			
7			2.8	4.1	28.2	42.7	12.3	24.2	[a] 11.1			
8			2.6	3.7	25.8	42.7	12.3	19.5	15.8			
9			2.3	3.7	24.2	42.7	12.3	18.0	10.4			
10			2.3	3.7	22.6	30.4	12.3	17.6	8.6			
11			2.3	3.7	21.8	30.4	12.3	16.5	7.5			
12			2.3	3.7	21.1	38.1	12.3	15.8	6.4			
13			2.3	3.7	18.0	38.1	12.3	15.8	5.9			
14			2.6	3.7	17.2	38.1	12.3	18.7				
15			2.6	7.5	16.5	38.1	12.3	18.0				
16			2.6	15.1	15.8	38.1	[a] 15.9	16.5				
17			2.6	24.2	19.5	35.1	18.0	15.8				
18			2.6	18.0	21.1	33.5	16.5	14.4				
19			2.6	39.7		33.5	15.8	13.7				
20			3.7	24.2		32.0	15.1	12.3				
21			3.7	18.0		30.4	9.8	11.7				
22			5.4	12.3		30.4		11.0				
23			7.5	13.7		30.4	12.3	11.0				
24			6.9	13.7		33.5	7.5	11.0				
25			7.5	25.8		33.5	12.3	11.0				
26			7.5	30.4		36.6	12.3	11.0				
27			6.4			36.6	12.3	10.4				
28			6.4			36.6	11.0	9.8				
29			5.9			36.6	12.3	9.2				
30			12.3			36.6	12.3	8.6				
31			9.8	33.5		36.6		8.6				
1914–15.												
1				6.7	24.2	33.5	16.5	9.8	6.4	22.6		
2			5.0	6.4	24.2	33.5	16.5	12.3	6.4	22.6		
3			3.5	6.2	24.2	33.5	16.5	6.4	6.4	15.1		
4			3.4	8.0	24.2	32.5	16.5	6.4	6.4	18.0		
5			4.1	9.2	29.0	33.5	16.5	6.4	6.4	19.5		
6			3.5	7.7	33.5	33.5	16.5	6.4	6.4	18.0		
7			3.7	7.7	33.5	33.5	16.5	6.4	6.4	18.0		
8			3.5	7.7	33.5	33.5	16.5	6.4	6.4	18.0		
9			3.5	10.1	33.5	32.5	16.5	6.4	9.8	13.7		
10			3.5	9.8	33.5	33.5	16.5	6.4	9.8	13.7		
11			5.6	9.8	33.5	13.7	16.5	6.4	9.8	13.7		
12			22.6	9.8	33.5	11.3	12.3	6.4	9.8	13.0		
13			10.4	9.8	33.5	11.3	16.5	6.4	9.8	13.0		
14			6.7	9.8	33.5	11.3	16.5	6.4	9.8	12.3		
15			5.6	9.8	33.5	11.3	13.7	6.4	9.8	12.3		
16			5.4	9.8	33.5	11.3	13.7	6.4	9.8	11.7		
17			10.7	9.8	33.5	7.5	13.7	6.4	9.8	11.0		
18			25.8	9.8	33.5	11.3	16.5	6.4	9.8	11.0		
19			19.5	9.8	33.5	11.3	16.5	6.4	9.8	10.4		
20			16.1	9.8	33.5	11.3	12.3	6.4	19.5	10.4		
21			16.5	9.8	33.5	11.3	16.5	6.4	19.5	10.1		
22			13.7	9.8	33.5	11.3	16.5	6.4	22.6	9.8		
23			12.0	24.2	33.5	11.3	16.5	6.4	22.6	9.5		
24			10.4	14.7	33.5	11.3	15.1	6.4	22.6	9.2		
25			8.6	32.7	33.5	11.3	15.1	6.4	22.6	8.6		
26			8.3	33.5	33.5	16.5	12.3	6.4	22.6	8.0		
27			9.2	21.8	33.5	16.5	12.3	6.4	21.8	8.6		
28			9.2	27.4	33.5	16.5	16.5	6.4	21.8	8.6		
29			7.7	33.5		16.5	16.5	6.4	22.6	8.0		
30			7.7	33.5		16.5	12.3	6.4	22.6			
31			7.5	33.5		16.5		6.4				

[a] Mean of morning and afternoon discharges.

NOTE.—Gage was read once daily except as indicated. Canal was dry on days for which discharge is not given.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1916.							**1916.**						
1	.....	28	24	11	5.9	5.5	16	18	28	15	9.3	5.9	.....
2	.....	28	24	10	9.8	a 5.2	17	18	28	15	8.3	a 6.0	.....
3	.....	28	22	10	a 9.7	4.8	18	18	28	11	8.2	6.1	.....
4	.....	27	22	10	9.6	a 4.8	19	18	26	13	8.0	a 6.3	.....
5	.....	27	20	10	a 8.0	4.8	20	22	28	14	8.0	6.5	.....
6	.....	27	22	8.8	6.9	.....	21	22	28	15	8.0	a 6.6	.....
7	.....	27	20	10	a 6.7	.....	22	24	28	15	7.7	6.7	.....
8	9.8	28	20	9.8	6.5	.....	23	24	28	14	7.5	a 6.7	.....
9	.....	28	19	9.3	a 6.4	.....	24	27	27	14	6.0	6.7	.....
10	.....	28	18	9.3	6.3	.....	25	27	28	16	5.8	a 8.4	.....
11	.....	28	18	9.5	a 6.2	.....	26	27	28	12	5.6	10	.....
12	.....	28	18	9.5	6.1	.....	27	27	28	12	5.4	a 7.8	.....
13	.....	26	17	9.3	a 6.0	.....	28	27	27	11	5.2	5.7	.....
14	.....	28	16	14	5.9	.....	29	28	25	11	5.6	a 5.5	.....
15	.....	28	15	10	a 5.9	.....	30	28	24	11	5.8	5.3	.....
							31	.....	24	.....	6.0	a 5.4	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	.....	.....	14	24	24	4.8	8.9	16	9.8	5.9	6.3	3.5
2	.....	.....	17	24	23	4.8	8.9	22	9.8	6.3	5.9	3.5
3	.....	.....	22	.....	24	4.8	8.9	22	19	6.3	4.8	3.5
4	.....	.....	20	9.8	24	4.8	8.9	22	18	5.9	5.1	3.5
5	.....	.....	18	22	23	4.8	8.9	22	18	5.9	4.8	3.5
6	.....	.....	18	22	24	4.8	8.9	22	17	5.9	4.8	3.2
7	.....	.....	16	22	26	6.3	8.9	22	15	5.9	4.8	3.2
8	.....	.....	12	22	24	6.3	8.9	9.8	13	5.5	4.5	3.0
9	.....	.....	9.8	21	26	6.3	8.4	9.8	11	5.5	4.2	1.9
10	.....	.....	15	21	26	6.3	8.9	8.9	11	5.1	4.2	.....
11	.....	.....	15	22	26	6.3	8.9	8.9	11	5.1	4.2	3.0
12	.....	.....	15	22	26	6.3	8.9	8.9	9.8	5.1	4.2	3.0
13	.....	.....	14	22	26	6.3	8.9	8.9	9.8	5.5	4.2	3.0
14	.....	.....	11	22	26	6.3	8.9	8.9	8.9	5.5	4.2	3.0
15	.....	.....	11	22	26	6.3	8.9	8.9	8.9	5.1	4.2	3.0
16	.....	.....	11	22	23	6.3	5.1	8.9	8.9	5.1	4.2	3.0
17	.....	.....	13	22	26	6.3	8.9	8.9	8.9	4.8	3.8	3.2
18	.....	.....	14	21	14	6.3	8.9	8.9	6.7	5.1	4.2	3.2
19	.....	.....	18	16	14	6.3	9.8	8.9	6.3	4.8	3.8	2.7
20	.....	.....	19	.....	14	9.6	9.8	8.9	6.3	4.8	3.8	4.8
21	.....	.....	10	.....	14	14	9.8	8.9	.....	3.5	4.2	16
22	.....	.....	.....	.....	14	14	9.8	8.9	.....	4.8	3.8	6.3
23	.....	.....	.....	.....	14	16	9.8	8.9	.....	4.8	3.8	4.8
24	.....	.....	.....	.....	23	16	9.8	8.9	.....	5.5	4.2	4.8
25	.....	.....	.....	.....	23	16	9.8	8.9	.....	5.9	3.8	5.5
26	.....	.....	.....	16	14	16	13	8.9	6.3	5.5	3.8	5.1
27	.....	13	.....	21	11	16	9.8	8.9	8.0	5.5	3.8	4.5
28	.....	12	.....	21	11	16	9.8	8.9	8.0	7.1	3.5	4.2
29	.....	14	.....	22	.....	18	15	8.9	6.3	5.9	3.5	4.2
30	.....	15	.....	22	.....	18	15	8.9	6.3	5.5	3.5	3.8
31	.....	.....	18	24	.....	8.9	.....	8.9	.....	5.9	3.5	.....

a No record, discharge interpolated.

NOTE.—No flow Sept. 6–30, Oct. 1, Nov. 26, Dec. 22–30, 1916; and Jan. 3, 20–25, June 21–25, and Sept. 10, 1917. No record Oct. 1 to Apr. 7 and Apr. 9–15. Canal probably dry.

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Daily discharge, in second-feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	16.5	16.0	8.4	8.9	11.9	16.4	23	16.0	17.0	6.2	5.0	4.2
2	16.8	16.2	9.4	8.9	11.9	15.2	23	16.0	14.0	5.5	4.2	3.9
3	15.0	15.0	9.4	8.9	11.9	13.6	23	15.0	14.0	5.5	3.9	3.9
4	16.4	.0	9.9	10.4	10.9	13.6	23	16.0	13.0	5.5	3.9	3.9
5	17.1	16.1	9.4	9.9	10.9	14.1	23	16.0	12.5	5.5	4.2	3.9
6	16.5	15.1	9.4	9.4	11.9	14.1	23	16.0	12.0	5.0	3.9	3.5
7	16.5	14.9	8.9	8.9	13.0	23	22	16.0	12.0	5.0	3.9	3.1
8	2.6	15.0	8.4	8.9	13.0	25	23	19.0	11.0	5.0	4.2	3.1
9	14.8	16.1	8.4	10.4	10.9	28	23	20	11.0	6.2	3.9	.....
10	16.2	14.9	8.4	10.9	8.9	28	23	18.0	10.5	5.5	3.9	.....
11	16.4	.0	8.9	10.4	9.9	18.8	23	19.0	10.5	5.5	3.9	.....
12	16.8	16.4	8.9	10.4	10.4	.0	23	19.0	10.0	5.5	4.2	.....
13	16.0	16.6	9.9	14.4	10.9	.0	23	16.0	8.0	5.0	3.9	.....
14	16.7	16.0	9.9	17.6	10.9	.0	23	16.0	8.0	4.6	4.2	.....
15	16.7	16.6	9.4	14.4	10.9	.0	23	14.0	8.0	4.6	4.6	.....
16	16.2	16.5	9.4	14.4	9.9	.0	22	15.0	8.0	4.0	4.6	.....
17	16.0	16.1	8.9	13.0	9.9	12.0	21	15.0	12.5	4.0	4.6	.....
18	14.9	.0	8.4	11.9	15.2	12.0	20	15.0	9.0	4.0	4.2	.....
19	15.1	14.9	8.4	10.9	23	12.0	17.5	15.0	8.0	4.6	4.2	.....
20	16.5	16.1	8.9	10.4	28	12.0	16.0	14.0	20	4.0	3.9	.....
21	.0	16.0	9.4	9.9	23	12.0	.....	14.0	11.5	4.0	3.9	.....
22	15.0	16.3	9.4	10.9	15.2	12.0	.....	14.0	9.0	3.5	3.9	.....
23	15.1	16.2	9.9	9.9	.0	20	.....	13.5	8.0	3.5	3.9	.....
24	16.8	16.5	9.9	9.9	25	22	.....	13.5	8.0	3.6	3.9	.....
25	16.9	.0	9.9	11.9	23	22	.....	13.5	8.0	4.0	3.5	.....
26	18.4	16.1	9.9	17.6	25	22	.....	13.5	7.0	4.0	3.1	.....
27	16.2	14.9	9.4	20	20	23	19.0	13.5	6.2	4.8	3.1	.....
28	.0	16.2	9.4	20	15.2	23	19.0	20	6.2	4.5	3.9	.....
29	16.4	16.0	8.9	16.4	.....	23	19.0	20	6.2	4.0	3.5	.....
30	15.1	16.2	8.9	15.2	.....	23	19.0	20	6.2	3.6	3.1	.....
31	16.4	.....	8.9	13.0	.....	23	.....	18.0	.....	3.6	3.5	.....

NOTE.—No record Apr. 21–26. Water turned out of canal for season on Sept. 9.

Monthly discharge of Escondido Mutual Water Co's. canal near Nellie, Calif., for 1896–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1896–97.				
October	12.00	0.85	.....	159
November	19.45	3.10	.....	274
December	15.60	4.25	.....	438
January	35.05	6.95	.....	997
February	37.00	19.45	.....	1,341
March	40.85	5.50	.....	1,424
April	37.00	12.00	.....	1,174
May	8.60	2.05	.....	210
The year	40.85	.0	.....	6,017
1897–98.				
December	12.00	3.10	.....	392
January	48.80	5.50	.....	1,028
February	37.00	10.20	.....	917
March	37.00	9.40	.....	1,193
April	13.80	7.70	.....	351
The year	48.80	.0	.....	3,881
1898–99.				
January	6.95	3.95	.....	158
February	35.05	3.60	.....	608
March	39.00	4.25	.....	717
April	12.90	4.25	.....	282
The year	39.00	.0	.....	1,765
1899–1900.				
January	21.45	4.90	.....	498
February	7.30	3.60	.....	351
March	15.60	3.95	.....	356
April	25.35	3.10	.....	438
May	31.20	4.90	.....	360
The year	31.20	.0	.....	2,003
1900–1901.				
October	.0	.0	.....	0
November	21.45	1.85	.....	293
December	3.60	3.10	.....	66
January	25.35	3.10	.....	652
February	33.10	12.00	.....	542
March	25.35	11.10	.....	846
April	20.50	14.70	.....	396
The year	33.10	.0	.....	2,795
1902–3.				
November	6.50	2.50	.....	26
December	9.00	2.00	.....	35
January	25.35	3.60	.....	352
February	27.25	5.50	.....	1,270
March	27.25	13.35	.....	1,310
April	27.25	5.50	.....	1,014
May	27.25	10.20	.....	230
The year	27.25	.0	.....	4,237

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Daily discharge, in second feet, of Escondido Mutual Water Co.'s canal near Nellie, Calif., for 1896–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1904–5.				
March	28.30	15.60	.....	1,138
April	28.30	27.25	.....	1,621
May	27.25	15.60	.....	676
The year	28.30	.0	.....	3,435
1905–6.				
January	25.35	8.60	.....	448
February	27.25	10.20	.....	1,192
March	27.25	10.20	.....	282
The year	27.25	.0	.....	1,922
1906–7.				
October	7.70	3.10	.....	128
November	15.60	8.60	.....	64
December	25.35	12.00	.....	1,055
January	24.30	12.00	.....	153
May	10.20	4.25	.....	278
June	10.20	6.20	.....	504
July	5.50	5.50	.....	65
The year	25.35	.0	.....	2,247
1907–8.				
November	9.00	8.60	.....	88
December	13.35	8.10	.....	588
January	14.70	9.80	.....	612
February	12.00	5.50	.....	299
March	12.00	5.50	.....	432
April	12.00	12.00	.....	714
May	12.00	7.70	.....	622
June	7.70	7.70	.....	53
The year	14.70	.0	.....	3,408
1908–9.				
November	6.95	6.20	.....	77
December	10.20	6.20	.....	414
January	19.45	5.50	.....	544
February	23.40	8.60	.....	397
March	23.40	9.40	.....	852
April	19.45	10.20	.....	798
May	10.20	10.20	.....	627
June	10.20	3.10	.....	363
July	2.55	2.05	.....	101
The year	23.40	.0	.....	4,173
1909–10.				
January	13.00	6.40	.....	502
February	17.30	11.70	.....	797
March	17.30	6.40	.....	754
April	7.50	6.40	.....	392
May	7.50	4.60	.....	395
June	3.00	1.20	.....	105
July	1.20	.80	.....	32
August	1.20	.80	.....	22
The year	17.30	.0	.....	2,999
1910–11.				
December	3.7	2.3	.....	166
January	19.5	3.0	.....	478
February	20.3	17.3	.....	543
March	20.3	17.3	.....	1,161
April	20.3	17.3	.....	1,151
May	16.5	4.6	.....	469
The year	20.3	.0	.....	3,968
1911–12.				
January	12.30	5.4	.....	494
February	7.50	4.1	.....	305
March	18.00	11.0	.....	487
April	25.80	14.4	.....	458
1911–12.				
May	25.80	6.4	.....	1,332
June	6.40	6.4	.....	12
The year	25.80	.0	.....	3,088
1912–13.				
December	4.90	2.10	.....	182
January	12.80	3.50	.....	222
February	19.30	6.10	.....	530
March	23.10	19.30	.....	1,294
April	21.50	6.10	.....	716
May	2.50	1.90	.....	16
The year	23.10	.0	.....	2,960
1913–14.				
December	12.30	2.30	.....	240
January	39.70	3.70	.....	676
February	40.40	15.80	.....	924
March	42.70	24.20	.....	1,951
April	18.00	9.80	.....	891
May	29.70	8.60	.....	1,020
June	15.80	5.90	.....	230
The year	42.70	.0	.....	5,932
1914–15.				
December	25.80	3.50	.....	541
January	33.50	6.70	.....	896
February	33.50	24.20	.....	1,773
March	33.50	11.30	.....	1,194
April	16.50	12.30	.....	918
May	12.30	6.40	.....	412
June	22.60	6.40	.....	793
July	22.60	8.00	.....	750
The year	33.50	.0	.....	7,277
1915–16.				
April	28	0	12.2	726
May	28	24	27.3	1,680
June	24	11	16.4	76
July	14	5.2	8.42	518
August	10	5.3	6.82	419
September	5.5	0	.837	49.8
The year	28	0	6.03	4,370
1916–17.				
November	15	0	1.80	107
December	22	0	10.7	658
January	24	0	16.3	1,000
February	26	11	21.0	1,170
March	18	4.8	9.34	574
April	15	5.1	9.57	569
May	22	8.9	11.7	719
June	19	0	8.73	519
July	7.1	3.5	5.45	335
August	6.3	3.5	4.25	261
September	16	0	4.00	238
The year	26	0	7.49	6,150
1917–18.				
October	18.4	.0	14.7	904
November	16.6	.0	13.8	821
December	9.9	8.4	9.19	565
January	20	8.9	12.2	750
February	28	.0	14.3	794
March	28	.0	15.6	959
April 1–20, 27–30	23	16.0	21.5	1,020
May	20	13.5	16.1	990
June	20	6.2	10.2	607
July	6.2	3.5	4.64	285
August	5.0	3.1	3.95	243
September	4.2	.0	.98	58.3

NOTE.—No record for years 1901–2 and 1903–4. Flume destroyed by fire in 1903–4. No flow in months for which record is not given.

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RINCON INDIAN RESERVATION DITCH NEAR VALLEY CENTER, CALIF.

LOCATION.—In sec. 35, T. 10 S., R. 1 W., in Rincon Indian Reservation, about 2,000 feet below intake, and about 6 miles northeast of Valley Center, San Diego County.

RECORDS AVAILABLE.—1912.

DISCHARGE.—Computed from gage heights giving head on 3-foot rectangular weir with end contractions.

COOPERATION.—Record furnished by Indian farmer, Rincon Indian Reservation.

The canal heads on the right bank of San Luis Rey River, and was in operation May 6 to June 30, 1912. The water is used for irrigation on the reservation.

Daily discharge, in second-feet, of Rincon Indian Reservation ditch near Valley Center, Calif., for 1912.

Day.	May.	June.	Day.	May.	June.	Day.	May.	June.
1		1.0	11	0.9	0.8	21	0.9	0.6
2		1.0	12	.9	.9	22	1.0	.6
3		.8	13	.9	.8	23	.8	.6
4		.6	14	.9	.8	24	.8	.6
5		1.0	15	.8	.8	25	1.0	.6
6		.7	16	.9	.9	26	1.0	.5
7		.7	17	.9	.8	27	1.0	.4
8		.8	18	.9	.8	28	1.0	.4
9		.7	19	.8	.7	29	.9	.4
10	0.9	.7	20	.8	.7	30	1.0	.4
						31	.0	

NOTE.—Canal in operation May 6 to June 30, 1912, but no record was furnished for May 6–9.

Monthly discharge of Rincon Indian Reservation ditch near Valley Center, Calif., for 1912.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
May 10–31	1.0	0.0	0.86	38.5
June	1.0	.4	.70	41.7

PALA INDIAN RESERVATION CANAL AT PALA, CALIF.

LOCATION.—In NW. ¼ SE. ¼ sec. 26, T. 9 S., R. 2 W., at sand box three-fourths of a mile below intake, 300 feet above highway bridge, and half a mile southeast of Pala, San Diego County.

RECORDS AVAILABLE.—May 22, 1912, to December 31, 1913 (incomplete).

GAGE.—Vertical staff in sand box showing head on steel plate at outlet.

DISCHARGE MEASUREMENTS.—Made from foot plank across canal below sand box.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Intake of canal is on left bank of San Luis Rey River three-fourths of a mile above highway bridge at Pala. The water is used for irrigation and domestic supply on Pala Indian Reservation.

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Discharge measurements of Pala Indian Reservation canal at Pala, Calif., for 1912–1913.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
Feb. 13	F. C. Ebert		5.2	Jan. 19	F. C. Ebert	0.23	1.6
May 22	do	0.37	2.6	May 9	do	.22	1.6
June 15	H. L. Davis	.66	6.4	June 13	do	.56	5.7
25	E. W. Case	.62	5.3	July 25	R. W. Day	.32	2.2
July 12	F. C. Ebert	.49	4.2	Aug. 31	F. C. Ebert	.38	3.3
Aug. 4	E. W. Case	.38	3.1	Oct. 6	do	.43	4.0
17	F. C. Ebert	.37	2.7				
Dec. 18	do	.56	5.7				

Daily discharge, in second-feet, of Pala Indian Reservation canal at Pala, Calif., for 1912–13.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1912.						1912.					
1			2.5	3.3		16					
2			3.0			17		1.5		2.7	
3			2.3			18		6.7			
4			2.2	2.8		19		8.7	3.4		
5			4.0			20		7.5	5.4	3.3	
6			3.8			21					
7			4.0		3.3	22	2.7	7.1			
8						23		6.7			
9			2.8	3.3		24		6.4			2.3
10			3.3			25		6.1			
11						26		5.4			
12			4.1			27		5.2	4.5	3.3	
13						28		5.1			
14						29		4.1			
15		6.6		3.8		30		7.4			
						31					

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1						0	0	4.8	0	2.4	3.0	
2					3.6	0	0	4.8	0	2.4	3.0	2.4
3						0	0	3.6	5.5	2.6	2.6	2.4
4						0	1.4	4.8	5.5		3.2	2.4
5						.6	1.4	4.8	4.8		3.2	2.4
6					4.8	.6	0	4.8	5.5		3.2	2.4
7						6.2	5.5		5.5	2.4	3.2	2.4
8						6.2	4.8		5.5	2.4	3.2	2.4
9						6.2	4.8	1.6	5.5	2.4	3.2	
10						4.8	4.8		4.8	2.4	3.0	2.4
11						3.6	4.8		5.5	2.4	3.2	2.4
12						0	4.2		5.5	2.4	3.0	2.4
13						0			5.2	1.8	3.0	2.7
14					2.4	0				2.4	3.0	1.8
15						0			4.8	2.4	3.0	1.8
16						0			4.8	1.8	3.0	2.4
17						0			4.8	2.4	3.0	2.4
18			5.6			0			5.5	3.6		2.4
19				1.6		2.4			5.1	3.2		2.4
20					0	0	6.2		5.1	3.6	2.4	
21					0	0	6.2		5.5	3.2	2.4	2.4
22				0	0	0	6.2		5.5	3.6	2.4	2.6
23					0	0	6.2	5.5	5.5	3.2	2.4	2.7
24					1.0	0	6.2	5.5	4.8	2.4	2.4	3.6
25					1.0	0	6.2		3.6	3.2	2.4	3.6
26				3.6	0	0	6.2	5.5	3.6	3.2	2.4	3.0
27					0	0		5.5	3.6	2.8	2.4	2.8
28					0	0		5.1	3.6	3.0	1.8	3.6
29						0		5.5	3.6	3.0	2.4	3.0
30	3.3					0		4.8	3.6	3.0	2.8	
31						0		4.8		3.0	3.3	

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Daily discharge, in second-feet, of Pala Indian Reservation canal at Pala, Calif., for 1912–13—Continued.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1913–14.				1913–14.				1913–14.			
1	3.6	4.8	0	11	4.8	0	0	21	3.6	0	0
2	3.6	4.8	0	12	4.4	0	0	22	3.6	0	0
3	3.2	.....	0	13	4.8	0	0	23	3.6	0	0
4	3.6	4.8	0	14	4.8	0	0	24	3.6	0	0
5	.....	.....	0	15	4.2	0	0	25	3.6	0	0
6	4.4	0	0	16	3.6	0	0	26	4.8	0	0
7	3.6	0	0	17	4.8	0	0	27	4.8	0	0
8	4.4	0	0	18	4.8	0	0	28	.....	0	0
9	4.8	0	0	19	4.4	0	0	29	4.8	0	0
10	4.8	0	0	20	3.8	0	0	30	4.8	0	0
								31	4.8	.....	0

NOTE.—Daily discharge computed from a well-defined rating curve. No record reported for days for which discharge is not shown.

SAN LUIS REY DITCH NEAR SAN LUIS REY, CALIF.

LOCATION.—In SW. ¼ NW. ¼ sec. 3, T. 11 S., R. 4 W., half a mile below intake and 2 miles northeast of San Luis Rey, San Diego County.

RECORDS AVAILABLE.—April 8 to 19, 1913.

GAGE.—Vertical staff one-half mile below intake.

DISCHARGE MEASUREMENTS.—Made from bridge 400 feet above gage or by wading.

CHANNEL AND CONTROL.—Sand and silt; not permanent.

ACCURACY.—Stage-discharge relation not permanent. The rating curve is defined by two measurements. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Intake of ditch is on left bank of San Luis Rey River in Guajome grant, near northwest boundary, about a mile above intake of Libby ditch. This ditch was originally used by the Fathers of San Luis Rey Mission. It is now owned by a corporation and is used for irrigating about 1,200 acres of sugar-beet land. The irrigation season lasts only for a few weeks each year.

Discharge measurements of San Luis Rey ditch near San Luis Rey, Calif., for 1913.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 8	F. C. Ebert	0.83	11
19	H. D. McGlashan	.27	2.5

Daily discharge, in second-feet, of San Luis Rey ditch near San Luis Rey, Calif., for 1913.

Apr. 8	9.7	Apr. 14	7.5
9	6.8	15	12.7
10	4.7	16	4.0
11	3.7	17	2.2
12	2.6	18	6.4
13	2.8	19	4.0

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MISCELLANEOUS MEASUREMENTS.

Measurements of discharge in the San Luis Rey River basin at points other than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous discharge measurements in San Luis Rey River drainage basin for 1894–1918.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
May —, 1894	San Luis Rey River			6,720
Oct. —, 1894	do			4
Dec. 8, 1894	do			10
Dec. 20, 1894	do			240
Jan. 15, 1895	do			5,000
Mar. 8, 1895	do			152
Apr. 11, 1895	do			100
Apr. 17, 1895	do			72
May 10, 1895	do			39
May 19, 1895	do			19
Sept. —, 1899	do			3.5
Aug. 15, 1903	do	Warner dam site		2.8
May 21, 1908	do	do		5.2
Feb. 2, 1911	do	Float measurement at Warner dam site		40
Feb. 3, 1911	do	do		138
Feb. 4, 1911	do	do		742
Feb. 5, 1911	do	do		130
Feb. 6, 1911	do	do		78
Feb. 7, 1911	do	do		63
Feb. 8, 1911	do	do		40
Oct. 7, 1916	do	Just below Warner dam site	1.12	18
Nov. 18, 1916	do	do	1.29	11
Nov. 25, 1916	do	do	1.31	14
June 20, 1899	do	Above Headworks Escondido Mutual Water Co.'s Canal near Nellie.		1.0
Aug. 19, 1900	do	do		2.0
Aug. 14, 1903	do	do		.5
May 10, 1914	do	do		18.
Aug. 14, 1916	do	do	1.40	4.5
Sept. 13, 1916	do	do	1.35	4.5
Nov. 22, 1916	do	do	1.67	13
Apr. 10, 1912	do	S W ¼ sec. 36, T. 10 S., R. 1. W. near Valley Center.		88
May 2, 1912	do	do		22
May 14, 1912	do	do		14
May 22, 1912	do	do		4.6
June 16, 1912	do	do		6.4
June 25, 1912	do	do		4.0
July 11, 1912	do	do		1.0
Aug. 4, 1912	do	do		[a] .1
July 20, 1916	do	do		1.6
July 31, 1916	do	do		1.3
Aug. 15, 1916	do	do		1.5
Sept. 14, 1916	do	do		4.9
Oct. 10, 1916	do	do		18
Nov. 23, 1916	do	do		17
July 20, 1916	do	Opposite lower pumping plant at Rincon	9.00	4.6
July 31, 1916	do	do	9.06	3.1
Aug. 15, 1916	do	do	9.06	2.5
Sept. 14, 1916	do	do	8.99	4.7
Nov. 23, 1916	do	do	9.04	16
Sept. —, 1899	do	4 miles east of Sickler's mill, Pala		2.5
Apr. 2, 1900	do	do		10
July 20, 1916	do	Just above mouth of Pauma Creek	1.00	14
Aug. 1, 1916	do	do	.94	6.1
Aug. 15, 1916	do	do	.94	6.1
Sept. 14, 1916	do	do	.85	7.7
Oct. 11, 1916	do	do		28
Nov. 23, 1916	do	do		24
Jan. 27, 1916	do	Just below mouth of Agua Tibia Creek near Pala.		[b] 75,300
July 19, 1916	do	do	1.00	19
Aug. 1, 1916	do	do	.96	15
Aug. 15, 1916	do	do	.90	12
Sept. 14, 1916	do	do		15
Oct. 11, 1916	do	do		43
Nov. 23, 1916	do	do		35
Dec. 30, 1917	do	do		17
Aug. 16, 1903	do	Pala		1.1

[a] Estimated. [b] Computed from cross-sections and slope data by U. S. Indian Service.

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Miscellaneous discharge measurements in San Luis Rey River drainage basin, for 1894–1918—Continued.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
July 19, 1916	San Luis Rey River	1,000 feet above United States Indian Service pumping plant at Pala.		19
Aug. 1, 1916	do	do		16
Aug. 15, 1916	do	do		12
Sept. 14, 1916	do	do		12
Oct. 11, 1916	do	do		41
Nov. 24, 1916	do	do		34
Jan. 13, 1916	do	1,000 feet above Pala bridge	9.10	67
Jan. 15, 1916	do	do	8.7	217
Apr. 19, 1912	do	Mission bridge, NE. ¼ NW. ¼ sec. 8, T. 11 S., R. 4 W.		167
Mar. 13, 1913	do	do		41
Aug. 5, 1916	do	do	53.66	1.1
Aug. 16, 1916	do	do		.5
Aug. 16, 1916	do	do	53.05	[a] 2.0
Sept. 15, 1916	do	do		[b] 3.1
Aug. 5, 1916	do	Opposite center sec. 18, T. 11 S., R. 4 W.		[c] .25
Sept. 15, 1916	do	Opposite center sec. 13, T. 11 S., R. 5 W.		[d] .0
Aug. 5, 1916	do	At Oceanside pumping plant		[d] .0
Aug. 5, 1916	do	Half a mile above bridge at Oceanside		[d] .0
Apr. 18, 1912	do	Mouth		164
Dec. 16, 1917	do	Oceanside	8.72	7.5
Feb. 19, 1918	do	do	9.26	66
Mar. 24, 1918	do	do		45
Apr. 23, 1918	do	do	8.82	13
Jan. 9, 1913	Canada Agua Caliente	Warner Springs	1.04	.2
Feb. 5, 1913	do	do	1.23	.2
Sept. 25, 1913	do	do		.2
Oct. 17, 1913	do	do		.1
Feb. 4, 1914	do	do	1.03	.2
Mar. 6, 1914	do	do	.95	1.0
Mar. 24, 1914	do	do		.4
May 9, 1914	do	do		.4
May 9, 1914	do	do		.6
May 22, 1914	do	do		.2
June 15, 1914	do	do		.2
July 11, 1914	do	do		.1
July 22, 1915	do	do		.4
Sept. 25, 1913	Big Lake Creek	About 2 miles west of Warner Springs	1.95	.02
Oct. 14, 1913	do	do	1.97	.02
Jan. 9, 1914	do	do	2.03	.06
Jan. 30, 1914	do	do	2.00	.1
Mar. 25, 1914	do	do	2.07	.08
Apr. 14, 1914	do	do	2.11	.04
May 8, 1914	do	do	2.13	.05
Oct. 16, 1914	do	do	2.23	.1
Apr. 19, 1915	do	do		.05
June 28, 1915	do	do	2.50	.05
Feb. 3, 1913	Buena Vista Creek	Monkey Hill, about 6 miles southwest of Warner Springs.		1.0
May 13, 1913	do	do		.1
Sept. 2, 1913	do	do		.02
Sept. 9, 1913	do	do		.02
Jan. 9, 1914	do	do		.09
Jan. 30, 1914	do	do		.2
Feb. 4, 1914	do	do	1.80	.3
Mar. 25, 1914	do	do	1.73	.09
May 8, 1914	do	do	1.70	.02
July 11, 1914	do	do		.02
Mar. 13, 1915	do	do	1.85	1.3
Apr. 19, 1915	do	do		.3
June 28, 1915	do	do	1.63	.05
Apr. 25, 1914	Lusardi Creek	About 4 miles below Warner dam site		1.3
May 14, 1914	do	do		.7
May 28, 1914	do	do		.5
Aug. 14, 1916	La Jolla Creek	Above diversion at mouth of canyon	1.00	1.8
Sept. 13, 1916	do	do	1.00	1.2
Oct. 7, 1916	do	do	1.00	1.9
Nov. 22, 1916	do	do	1.03	1.3
Aug. 14, 1916	Potrero Creek	Below west ditch and above east ditch near La Jolla.	.10	.3
Aug. 14, 1916	do	At Rincon-La Jolla road crossing	1.10	.2
Sept. 13, 1916	East Fork of Potrero Creek.	Above both diversions near La Jolla		.9
Oct. 8, 1916	do	do	.15	.08

[a] Includes 1.5 second-feet flowing in Libby ditch. No surface flow between head of Libby ditch and quarter of a mile above Mission bridge, Aug. 17–21. Flow at bridge reduced to 0.25 second-foot by evening.
[b] No diversion by Libby ditch for about 3 weeks.
[c] Estimated.
[d] Stream dry.

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Miscellaneous discharge measurements in San Luis Rey River drainage basin for 1894–1918—Continued.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
Nov. 22, 1916	East Fork of Potrero Creek.	Above both diversions near La Jolla	0.13	0.8
Sept. 13, 1916	do	Above dam and below west ditch	.10	.5
Sept. 13, 1916	do	Below both diversions		.2
Aug. 14, 1916	West Potrero ditch	Intake		.6
Oct. 8, 1916	do	Above dam		.04
Nov. 22, 1916	do	do		.08
Aug. 14, 1916	West Fork of Potrero Creek.	Highway crossing near La Jolla	1.00	.04
Sept. 13, 1916	do	do	.94	.07
Oct. 8, 1916	do	do	1.03	.13
Nov. 22, 1916	do	do	1.02	.08
Aug. 14, 1916	Cuca Creek	Mouth		.08
Sept. 13, 1916	do	do		.06
Nov. 22, 1916	do	do		.1
May 10, 1914	Escondido Mutual Water Co's. canal.	150 feet below weir at intake		17.5
July 20, 1916	Paradise Creek	Road crossing above E. M. W. Co's. power house.	.57	[b] 3.1
July 31, 1916	do	do	.30	2.1
Aug. 15, 1916	do	do	.17	2.5
Sept. 13, 1916	do	do	.07	1.4
Oct. 10, 1916	do	do	1.17	1.5
Nov. 23, 1916	do	do	1.06	1.0
July 20, 1916	East Fork of Sparkman Creek.	Pala-Rincon road crossing		.4
July 31, 1916	do	do		.4
Aug. 15, 1915	do	do		.7
Sept. 13, 1916	do	do		.2
Oct. 10, 1916	do	do		2.5
Nov. 23, 1916	do	do		1.1
July 20, 1916	Middle Fork of Sparkman Creek.	do		[b] .05
July 31, 1916	do	do		.09
Aug. 15, 1916	do	do		[b] .05
Sept. 13, 1916	do	do		.09
Oct. 10, 1916	do	do		.06
Nov. 23, 1916	do	do		.05
July 20, 1916	West Fork of Sparkman Creek.	do		1.1
July 31, 1916	do	do		.5
Aug. 15, 1916	do	do		1.1
Sept. 13, 1916	do	do		.4
Oct. 10, 1916	do	do		1.3
Nov. 23, 1916	do	do		.75
Sept. 13, 1916	Ditch	Diverts from West Fork of Sparkman Creek.		.1
July 20, 1916	do	Diverts from Salmon's Spring		.3
July 31, 1916	do	do		.1
Aug. 15, 1916	do	do		.09
Sept. 13, 1916	do	do		.1
Oct. 10, 1916	do	do		.02
Nov. 23, 1916	do	do		.0
July 20, 1916	Nigger Canyon Creek	Pala-Rincon road crossing	1.00	.4
Aug. 1, 1916	do	do	1.00	.4
Aug. 15, 1916	do	do	.97	.4
Sept. 14, 1916	do	do	.93	.2
Nov. 23, 1916	do	do		.21
Feb. 12, 1912	Pauma Creek	One-half mile above Pauma Indian Reservation reservoir.		1.4
Apr. 20, 1912	do	County highway bridge near Pala		22.
May 2, 1912	do	do		6.6
May 22, 1912	do	do		4.1
June 15, 1912	do	do		[c] .0
July 11, 1912	do	1,500 feet above intake for Pauma Indian Reservation canal, about 2 miles above county highway bridge near Pala.		1.9
Do	do	County highway bridge near Pala		[c] .0
Jan. 19, 1913	do	Near county highway ford on road from Pala to Pauma Indian Reservation.		.4
Apr. 18, 1913	do	do	.96	8.5
May 19, 1913	do	do		[c] .0
Jan. 24, 1914	do	Near Pala	.73	2.2
Apr. 25, 1914	do	do		10
May 14, 1914	do	do		3.6
May 28, 1914	do	do		1.2
July 20, 1916	do	Just below intake of ditch		4.0
Aug. 1, 1916	do	do	1.00	4.6

[a] Sinks into sand before reaching river. [b] Estimated. [c] Stream dry.

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Miscellaneous discharge measurements in San Luis Rey River drainage basin for 1894–1918—Continued.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
Aug. 15, 1916	Pauma Creek	Just below intake ditch	0.92	[a] 2.6
Sept. 14, 1916	do	do	1.02	2.1
Nov. 23, 1916	do	do		3.5
Jan. 13, 1916	do	Pala-Rincon road crossing		4.9
Jan. 15, 1916	do	do		22
July 20, 1916	do	do	1.00	1.3
Oct. 11, 1916	do	do		3.2
July 20, 1916	Pauma ranch ditch	Intake		1.4
Aug. 1, 1916	do	do	1.3	3.0
Aug. 15, 1916	do	do	1.03	1.5
Sept. 14, 1916	do	do	1.04	1.4
Nov. 23, 1916	do	do		.78
July 20, 1916	Frey Creek	Pala-Rincon road crossing		.4
Aug. 1, 1916	do	do		.2
Aug. 15, 1916	do	do		.2
Sept. 14, 1916	do	do		1.0
Oct. 11, 1916	do	do		1.3
Nov. 23, 1916	do	do		.53
Aug. 15, 1903	Sicklers ditch	Sickler's ranch near Pala		2.1
Oct. 9, 1903	do	do		2.1
Mar. 29, 1912	Agua Tibia Creek	Near mouth in sec. 31, T. 9 S., R. 1 W		1.3
Apr. 20, 1912	do	do		2.7
July 19, 1916	do	Above intake of ditch at mouth of canyon	.48	[b] 2.6
Aug. 1, 1916	do	do	.50	[b] 2.2
Aug. 15, 1916	do	do	.43	[c] 2.1
Sept. 14, 1916	do	do	.27	[d] 1.7
Nov. 24, 1916	do	do	.67	2.3
Jan. 13, 1916	do	Pala-Rincon road crossing		.6
July 19, 1916	do	do		[e] .02
Oct. 11, 1916	do	do		[e] 2
July 19, 1916	Marion Creek	Above diversion at mouth of canyon	1.00	.4
Aug. 1, 1916	do	do	1.00	.4
Aug. 15, 1916	do	do	.97	.2
Sept. 14, 1916	do	do		.3
Nov. 24, 1916	do	do		.37
July 19, 1916	do	Pala-Rincon road crossing		[e] .2
Aug. 1, 1916	do	do		.3
Oct. 11, 1916	do	do		1.1
Aug. 15, 1916	West Fork of Marion Creek.	Mouth		[e] .03
Sept. 14, 1916	do	do		[e] .04
Nov. 24, 1916	do	do		.05
July 19, 1916	McGee Creek	Highway crossing east of Pala		[g] .0
Do	Jennie McGee Creek	Highway crossing at Pala		[g] .0
Do	Little Temecula Creek	Highway crossing west of Pala		[e] .07
June 26, 1912	Morena ditch	Pala		2.1
July 12, 1912	do	do		1.2
Aug. 4, 1912	do	do		.9
Dec. 18, 1912	do	do		.4
Feb. 20, 1913	do	do		.2
Mar. 13, 1913	do	do		.3
May 9, 1913	do	do		2.1
June 13, 1913	do	do		.8
Oct. 6, 1913	do	do		.25
July 19, 1916	Monserate Creek	Mouth 5 miles southwest of Pala		[g] .0
Do	Fallbrook Creek	Mile north of Bonsall		[e] .05
Jan. 27, 1916	Moosa Creek	At dam in NW. ¼ sec. 1 T. 11 S., R. 3 W., half a mile below South Fork.		[f] 8,346
Jan. 13, 1916	do	Mouth		.9
July 19, 1916	do	do		[e] .02
Do	Gopher Creek	Highway crossing southwest of Bonsall		[e] .02
May 3, 1912	San Luis Rey ditch	One-half mile below intake, SW. ¼ NW. ¼ sec. 3 T. 11 S., R. 4 W.		2.4
Do	Libby ditch	Near intake, NE. ¼ NE. ¼ sec. 4 T. 11 S., R. 4 W., 2 miles northeast of San Luis Rey.		1.6
Jan. 17, 1913	do	do	1.34	[e] 3.2
Feb. 1, 1913	do	do	.96	.4
Apr. 8, 1913	do	do	1.43	1.8
Do	do	do	1.01	.3
Apr. 19, 1913	do	do		[g] .0
Aug. 5, 1916	do	Half a mile below intake		2.0

[a] All diverted at about half a mile below.
[b] All diverted by ditch.
[c] All diverted except about 2 miners inches.
[d] Most of water diverted but spilled back halfway down the ditch.
[e] Estimated.
[f] Computed by J. F. Covert.
[g] Stream dry.

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SANTA MARGARITA RIVER BASIN.

GENERAL FEATURES.

Temecula Creek, as Santa Margarita River is known at its beginning, rises on the western slope of the San Jacinto Mountains in the northwestern part of San Diego County just north of the San Luis Rey drainage basin, flows north into Riverside County, then west about 15 miles to Temecula, where it flows southwest through Temecula Canyon into San Diego County and empties into the Pacific Ocean as Santa Margarita River. The highest elevation in the basin is about 5,500 feet, on the divide between Temecula and San Luis Rey. Temecula Creek has few tributaries, and the topography is rather broken, though there are several small valleys in the upper reaches. The rock formation through which it flows is a loose granite with good soil covering, and there is considerable growth of small, scrubby timber. The annual precipitation ranges from 10 to 30 inches and occurs almost entirely as rain. The discharge is heavy in the spring during the flood season, but is small during the rest of the year.

GAGING-STATION RECORDS.

TEMECULA CREEK NEAR TEMECULA, CALIF.

LOCATION.—In Temecula grant, at highway bridge on road from Temecula to Fallbrook and Pala, 1½ miles south of Temecula, San Diego County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 1,000 feet above sea level.

RECORDS AVAILABLE.—January 1 to December 31, 1906 (gage heights only.)

GAGE.—Vertical staff fastened to downstream pier on right bank.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Sand; continually changing; usually in two channels during low stages. Both banks are high and not likely to be overflowed.

Daily discharge has not been computed on account of small number of discharge measurements made at times of excessive changes in channel.

Discharge measurements of Temecula Creek near Temecula, Calif., for 1905–1908.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1905.		*Feet.*	*Sec.-ft.*	1906.		*Feet.*	*Sec.-ft.*
Nov. 14	W. B. Clapp	3.10	5.8	Apr. 13	W. V. Hardy	5.84	12.1
Dec. 30	W. V. Hardy	2.98	4.6	27	do	5.82	5.6
				May 15	do	5.88	6.4
1906.				June 26	C. H. Lee	5.80	2.6
Jan. 12	W. V. Hardy	2.90	4.4	Aug. 5	R. S. Hawley		.8
29	do	2.94	4.9	Oct. 10	W. F. Martin		3.9
Feb. 10	do	2.99	4.4	Nov. 12	W. V. Hardy	5.80	7.6
24	do	3.20	3.3	Dec. 4	do	6.00	7.2
Mar. 5	do	3.49	6.0	29	do	6.10	14.9
6	do	3.42	5.4				
18	do	3.82	16.8	1908.			
19	do	3.69	12.0	July 12		6.12	2.6

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Daily gage height, in feet, of Temecula Creek near Temecula, Calif., for 1906.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Dec.
1	3.0	2.9	3.4	5.9	5.75	5.8	5.8	.....
2	3.0	2.8	3.5	5.8	5.7	5.8	5.8	.....
3	3.0	2.8	3.5	5.8	5.7	5.8	5.8	6.0
4	3.0	2.8	3.45	5.8	5.7	5.8	5.8	6.0
5	3.0	2.8	3.45	6.7	5.75	5.8	5.8	6.0
6	3.0	2.8	3.5	6.3	5.75	5.8	5.8	6.0
7	3.0	2.8	3.5	5.8	5.75	5.8	5.8	5.9
8	3.0	2.9	3.55	5.8	5.75	5.8	5.8	5.9
9	2.9	2.95	3.5	5.8	5.75	5.8	5.8	5.9
10	2.9	2.95	3.6	5.8	5.75	5.8	5.8	5.9
11	2.9	3.0	3.9	5.8	5.75	5.75	5.8	5.9
12	2.9	3.0	4.9	5.8	5.7	5.7	5.8	6.0
13	2.9	3.0	5.0	5.8	5.7	5.75	5.8	6.0
14	2.9	3.0	4.9	5.8	5.7	5.8	5.8	5.9
15	2.9	3.0	4.9	5.8	5.7	5.75	5.8	5.9
16	2.9	3.2	3.7	5.8	5.8	5.75	5.8	5.95
17	2.9	3.2	3.7	5.8	5.85	5.75	5.8	6.0
18	2.9	3.25	3.65	5.8	5.85	5.75	.....	6.0
19	3.1	3.25	3.65	5.75	5.85	5.75	.....	5.9
20	3.0	3.25	3.5	5.75	5.85	5.75	.....	5.9
21	3.0	3.25	3.3	5.75	5.85	5.75	.....	5.9
22	3.0	3.25	3.4	5.75	5.9	5.75	.....	5.9
23	3.0	3.25	9.6	5.75	5.9	5.75	.....	5.95
24	3.0	3.25	9.65	5.75	5.85	5.75	.....	5.9
25	3.0	3.25	8.0	5.75	5.85	5.75	.....	.....
26	3.0	3.3	7.6	5.75	5.9	5.8	.....	6.2
27	2.9	3.4	6.0	5.75	5.85	5.8	.....	6.0
28	2.9	3.4	5.5	5.75	5.8	5.8	.....	6.2
29	2.9	.....	5.5	5.75	5.8	5.8	.....	6.05
30	2.9	.....	5.9	5.75	5.8	5.8	.....	6.1
31	2.9	.....	5.9	.....	5.8	.....	.....	6.25

NOTE.—No gage-height record was kept from July 18 to Dec. 2, 1906.

MISCELLANEOUS MEASUREMENTS.

Measurements of discharge at points in the Santa Margarita River basin and nearby drainage other than those at which gaging stations have been maintained are recorded in the following table:

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-ft.*
Nov. 14, 1905	Temecula Creek	Paube dam site, 12 miles above Temecula	.....	2.5
July 11, 1915	do	Paube grant, just below junction with Arroyo Seco, in Nigger Canyon.	.....	2.4
Mar. 10, 1914	do	Old gaging station near Temecula	7.60	10
May 8, 1914	do	do	.....	9.1
Feb. 13, 1917	do	Just above junction with Murrieta Creek	.....	14
Mar. 7, 1917	do	do	.....	26
27, 1917	do	do	.....	15
June 3, 1918	do	do	.....	8.4
Dec. 1, 1915	do	At head of Temecula Canyon	.....	10
Sept. 26, 1915	do	2½ miles above railway station at Fallbrook	.....	3.6
July 11, 1915	Arroyo Seco	Just above junction with Temecula Creek at Nigger Canyon, Pauba grant.	.....	.1
May 8, 1914	Murrieta Creek	300 feet above mouth	.....	1.2
Dec. 1, 1915	do	Near mouth	.....	1.1
Feb. 13, 1917	do	do	.....	2.1
Mar. 7, 1917	do	do	.....	3.5
27, 1917	do	do	.....	1.7
June 3, 1918	do	do	.....	.8
May 24, 1899	Trabuco Creek	In ditch near San Juan capistrano	.....	1.08

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SANTA ANA RIVER BASIN.

GENERAL FEATURES.

Of the three important streams that traverse the valley of southern California—Santa Ana, San Gabriel, and Los Angeles rivers—the Santa Ana is the largest. Its drainage basin, lying south of the San Bernardino Mountains and the Sierra Madre and taking waters from their southern slopes, is the most eastern and comprises by far the largest area, including the northern part of Orange County, the northwestern part of Riverside County, and the southwestern part of San Bernardino County. Of the total drainage area, comprising between 1,800 and 1,900 square miles, about two-thirds is in the valley, but only a few hundred square miles yields much run-off.

The Santa Ana rises in the heart of the San Bernardino Mountains, about 30 miles east of Highland, and flows westward for about 25 miles to the mouth of its upper canyon; thence southwestward across San Bernardino Valley, through the lower canyon in the Santa Ana Mountains, and across the coastal plain to the Pacific Ocean at Newport Beach. Although the course of the stream measures about 100 miles, there is continuous surface flow from mountain to sea only during winter floods.

Many small streams from the southern slope of the San Bernardino Mountains and a few from the Sierra Madre west of the Cajon Pass flow toward the Santa Ana, but some of these discharge water to the main stream only in the flood seasons, the ordinary flow either being diverted or sinking into the sand and gravel of San Bernardino Valley. The principal tributaries are Bear, Alder, Mill, Lytle, and Chino creeks.

Altitudes in the Santa Ana drainage area range from a few feet above sea level on the coastal plain to 2,000 or 3,000 feet on the Santa Ana Mountains, 500 to 1,200 feet in the San Bernardino basin, and 2,000 to 11,000 feet on the southern slope of the San Bernardino Mountains. The more elevated regions are rough and rugged, and the mountain sides are incised by many canyons which are the result of active stream erosion. The rocks are granitic. The mesa and valley lands at the base of the mountains are composed of granitic gravel and sand of great depth. The higher mountain slopes support considerable timber; the lower slopes are as a rule covered with brush and grass.

The mean annual precipitation varies considerably in different parts of the Santa Ana basin. On the coastal plain west of the Santa Ana Range it averages 10 inches or more; eastward, in the San Bernardino Valley, it amounts to 10 to 16 inches. On the mountain slopes it ranges from 20 inches at the base to 40 inches or more near the crest, and in Bear Valley north of the highest peaks, such as San Bernardino and San Gorgonio, it may be even 50 inches.

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Considerable snow falls in the region of these high peaks in winter and remains well into the summer, especially on the northern slopes, from which the headwaters of the Santa Ana come.

Irrigation in the valleys of the Santa Ana basin has attained a very high state of development. Probably no other stream of its size in the United States is made to serve greater or more varied uses. To begin with, a portion of the flow is regulated by artificial storage in the upper part of the basin, and the water passes successively through three hydroelectric plants before reaching the mouth of the canyon. On leaving the lower plant it is turned into high-level canals and used for municipal supply and irrigation about Redlands and Highland. The irrigation water that escapes through seepage to the body of ground water is recovered from springs and flowing wells and from pumped wells and is used for irrigation around San Bernardino and Riverside, the power for pumping being generated on the upper reaches of the stream. Bedrock obstructions at Riverside Narrows, below the city of Riverside, force to the surface a part of the water in the gravel bed of the stream above this point. Only a few miles below it is again diverted and used for irrigation on the coastal plain in the vicinity of Santa Ana and Anaheim. The seepage water from irrigation is once more recovered by numerous pumping plants and flowing wells on the lower coastal plain west of Santa Ana. It is thus evident that the same water, in passing from mountain to sea, a distance of not more than 100 miles, may be used at least seven times for power and irrigation. In like manner the water in many of the tributaries may be used several times before reaching the main stream.

GAGING-STATION RECORDS.

SANTA ANA RIVER NEAR MENTONE, CALIF.

LOCATION.—In SW. ¼ sec. 4, T. 1 S., R. 2 W., near mouth of canyon, one-fourth mile above Southern California Edison Co.'s plant, one-half mile above mouth of Deep Creek, and 3½ miles northeast of Mentone, San Bernardino County. Previous to October 1, 1914, station was maintained just above ford above Warm Spring Canyon, 1½ miles above present site.

DRAINAGE AREA.—189 square miles (measured on topographic map); 182 square miles at original site above Warm Spring Canyon.

ELEVATION.—About 1,900 feet above sea level.

RECORDS AVAILABLE.—July 1, 1896, to September 30, 1918.

GAGE.—Gurley graph water-stage recorder with concrete well and house on left bank, one-fourth mile above power house; installed September 3, 1917. (See Pl. XI, *A*.) Vertical staff, at same site and datum was read February 11, 1916, to September 2, 1917. (See Pl. X, *B*, p. 61.) October 1, 1914, to January 17, 1916 (when vertical staff was destroyed by flood), gage was maintained at different datum, 10 feet above water-stage recorder. Original staff was on left bank 100 feet above ford above Warm Spring Canyon. November 9, 1898, gage was moved downstream to a site 800 feet below mouth of Warm Spring Canyon. After January 1, 1901, original staff was again read. Gage datum was lowered June 30, 1903, and new datum maintained until January 1, 1910, when all station equipment was destroyed by flood. January 23, 1910, new inclined staff was installed on left bank, 50 feet

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A.

B.

C.

WELL AND HOUSE FOR WATER-STAGE RECORDERS.

A, **Santa Ana River near Mentone, Calif.;** ***B,*** **Rogers Creek near Azusa, Calif.;** ***C,*** **Santa Anita Creek near Sierra Madre, Calif.**

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A.

B.

C.

CONCRETE WELL AND HOUSE FOR WATER-STAGE RECORDERS.

A, San Dimas Creek near San Dimas, Calif.; *B*, *C*, San Gabriel River near Azusa, Calif.

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above former site, at a new datum. February 25, 1910, a vertical staff was installed on right bank, 100 feet above ford, apparently at a new datum. This gage was read until October 1, 1914, when station was moved downstream to present site.

DISCHARGE MEASUREMENTS.—Made from cable at gage, from highway bridges near station, or by wading. At original station cable was between gage and ford.

CHANNEL AND CONTROL.—Gravel and boulders; shifting during high water. Velocities are very high during flood stages and large numbers of boulders are moved downstream.

EXTREMES OF DISCHARGE.—1896–1918: Maximum stage not known, as gage was destroyed by flood January 17, 1916; maximum discharge January 27, 1916 (discharge, 29,100 second-feet); minimum stage, 2.3 feet during parts of every month from October, 1913, to January, 1914 (discharge, 0.6 second-foot).

DIVERSIONS.—The intake of the Southern California Edison Co.'s canal is at its plant No. 2, 2½ miles above the gage. From the tailrace the water is carried across Santa Ana River and used for irrigation. The Greenspot pipe line originally diverted water for irrigation below original station, but since 1903 it has been supplied from the power canal. September 7, 1911, its intake was changed to the forebay at Mentone power house. The record of combined discharge of river and canals did not include this diversion from the power canal until intake was established at forebay.

REGULATION.—Water is stored on Bear Creek at Bear Valley reservoir. Southern California Edison Co.'s power plants Nos. 1 and 2 are 5¼ and 2¾ miles, respectively, above the Mentone plant at the mouth of the canyon.

ACCURACY.—Stage-discharge relation generally permanent except during high stages. Rating curves have usually been fairly well defined. Gage read to tenths or half tenths once daily; in 1916 and 1917 read to hundredths. Daily discharge ascertained by applying gage height to rating table, or for short periods not covered by rating tables, computed by shifting-control method or estimated from discharge measurements. From 1901–1904 discharge was measured over weirs at head of canals except for the period, January 1 to May 31, 1901; February 26 to April 23, 1902; and January 1 to 22, 1903. Records fair.

Discharge measurements of Santa Ana River near Mentone, Calif., for 1896–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1896.				**1898.**			
June 20	J. B. Lippincott	1.28	61.8	Nov. 9	F. H. Olmsted	[a] 2.10	22
July 28	J. H. Quinton	1.29	59.7	Dec. 8	do	2.13	25
Nov. 21	J. B. Lippincott	.98	31.7				
1897.				**1899.**			
Jan. 27	J. B. Lippincott		43.6	Jan. 12	S. G. Bennett	2.34	38
Mar. 4	do	1.45	101	Feb. 18	do	2.16	28
May 3	do	1.50	96	Mar. 23	do	2.30	30
4	do	1.50	98	May 6	do	2.45	25.8
June 15	do	1.15	64	31	do	2.27	21
July 5	A. Q. Campbell	1.20	72	June 15	do	2.21	19.6
July 6	do	1.11	60	July 15	do	2.30	25.9
Aug. 8	do	1.32	56	27	do	2.30	23.6
31	do	1.35	60	Aug. 24	do	1.85	10.9
Sept. 30	do	1.13	43	**1900.**			
Nov. 14	do	1.25	40	Apr. 14	S. G. Bennett	2.25	22.7
1898.				May 5	do	4.35	244
Jan. 8	J. B. Lippincott	1.00	26	July 13	do	2.35	22.3
Mar. 9	H. Crowe	1.05	44	Nov. 20	do	3.30	102
Apr. 11	J. B. Lippincott	.98	32	**1901.**			
29	do	.90	30	Feb. 5	S. G. Bennett	[b] 1.65	101
June 12	do	1.10	35	23	do	1.80	110
July 23	do	1.10	42	Mar. 4	do	1.70	102
Sept. 8	do	1.05	35	30	do	1.35	40.6
Oct. 18	F. H. Olmsted	.95	23	July 6	do	1.15	26.1

[a] New gage installed 800 feet below mouth of canyon.
[b] Station moved back to old gage Jan. 1, 1901.

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Discharge measurements of Santa Ana River near Mentone, Calif., for 1896–1918—Con.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1901.			
Aug. 20	S. G. Bennett	1.24	30.8
Oct. 8	do	1.25	32
Dec. 5	do	1.03	14
1902.			
Apr. 5	S. G. Bennett	1.39	51
May 31	do	.91	8
July 10	do	.84	5
Sept. 3	W. B. Clapp	.95	10
Nov. 5	S. G. Bennett	.87	5
1903.			
Feb. 6	W. B. Clapp	1.30	37
Apr. 1	do	7.00	4,906
2	do	3.36	1,068
3	do	2.50	566
24	Clapp and Clausen	1.10	132
May 16	W. B. Clapp	.85	95
June 30	do	.20	56
1904.			
Mar. 4	do	1.15	21
12	do	1.25	26
22	Clapp and Murphy	1.10	20
Apr. 20	W. B. Clapp	1.65	49
21	do	1.38	24
May 14	do	1.25	16
28	do	1.40	21
June 29	do	1.45	24
Sept. 21	do	.....	2
Nov. 11	E. C. LaRue	.83	1
1905.			
Feb. 13	Clapp and LaRue	1.15	10
21	E. C. LaRue	1.70	17
22	do	1.65	10
23	do	1.65	11
Mar. 14[a]	do	2.60	188
14[b]	do	2.50	138
15[a]	do	2.30	132
15[b]	do	2.10	113
30	R. S. Hawley	1.90	81
Apr. 14	do	1.95	86
May 17	do	2.25	111
June 7	do	2.20	79
26	do	1.43	4
July 6	do	1.40	3
1906.			
Jan. 20	C. H. Lee	2.17	87
Feb. 11	do	1.51	11
11	do	1.57	15.8
11	do	1.54	12.8
12	do	1.45	6.7
Mar. 14	do	3.50	351
16	do	5.40	1,410
16	do	5.80	1,870
17	do	4.15	677
17	do	3.85	597
18	do	3.70	405
23	M. P. Beeson	3.05	156
25	do	4.90	913
26	do	6.35	2,250
26	do	5.90	1,780
27	do	5.25	1,200
Apr. 10	C. H. Lee	3.00	130
21	M. P. Beeson	3.50	214
May 12	do	3.60	148
12	do	3.60	160
June 2	do	3.50	149
28	do	3.00	70
Aug. 4	R. S. Hawley	2.55	13.1
Oct. 11	W. F. Martin	2.31	2.9
Dec. 28	do	3.85	276
1907.			
Jan. 10	W. F. Martin	3.82	284
Feb. 27	do	3.95	379
Mar. 12	do	4.1	501
26	do	4.65	872
Apr. 29	W. B. Clapp	3.35	184
1907.			
June 12	W. F. Martin	3.00	110
27	W. B. Clapp	2.75	79
July 30	W. F. Martin	2.52	59
Aug. 22	do	2.15	16
Sept. 18	W. B. Clapp	1.85	2.6
1908.			
Jan. 29	W. F. Martin	3.0	126
Feb. 20	do	2.64	77
May 15	W. B. Clapp	1.85	4
1909.			
Mar. 5	W. B. Clapp	2.75	49
23	W. F. Martin	3.30	124
May 12	W. B. Clapp	3.05	83
June 18	do	2.38	9
July 9	do	2.20	2.8
Dec. 31	do	4.75	477
1910.			
Feb. 5	R. E. Haines	1.55	31
24	J. E. Stewart	1.40	19
Apr. 13	do	1.95	67
28	W. B. Clapp	1.30	11
June 7	do	1.21	6.9
July 20	J. E. Stewart	1.92	67
Sept. 14	W. B. Clapp	1.28	6.4
1911.			
Feb. 17	W. V. Hardy	2.28	104
21	do	2.01	76
Apr. 8	do	3.68	162
22	do	3.43	96
May 25	do	3.15	49
June 26	H. D. McGlashan	2.94	21
Aug. 29	F. C. Ebert	2.53	1.7
1912.			
Jan. 11	F. C. Ebert	2.50	1.4
Mar. 20	do	2.71	9.3
May 27	do	2.49	2.2
Aug. 27	do	2.61	4.7
Oct. 23	do	2.43	1.7
1913.			
Jan. 15	F. C. Ebert	2.42	1.1
Mar. 4	do	2.48	2.3
4	W. H. Spear	2.48	2.5
Apr. 23	H. D. McGlashan	2.44	1.6
July 12	F. C. Ebert	2.40	1.2
Oct. 7	do	2.30	.6
1914.			
Jan. 14	F. C. Ebert	2.34	.9
15	do	3.96	224
Feb 6	do	2.31	9.8
28	do	2.73	127
Mar. 11	do	2.42	60
29	do	2.34	40
Apr. 16	do	2.38	42
May 1	do	2.55	88
7	do	2.46	68
15	do	2.37	56
June 25	do	2.12	14
Aug. 13	do	1.85	2.1
Nov. 20	do	1.80	1.7
Dec. 23	do	1.86	1.8
1915.			
Feb. 16	F. C. Ebert	6.77	154
26	do	6.5	83
Mar. 12	do	6.42	65
25	do	6.80	153
Apr. 8	do	6.72	115
15	do	6.73	125
May 15	do	7.1	240
23	do	6.97	177
June 28	do	6.59	91
July 15	do	6.45	73
Aug. 12	do	5.83	11
Nov. 2	do	5.94	2.2
22	do	1.73	2.1

[a] Antemeridian. [b] Postmeridian.

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Discharge measurements of Santa Ana River near Mentone, Calif., for 1896–1918—Con.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Jan. 4	F. C. Ebert	1.87	5.9	Mar. 6	F. C. Ebert	0.71	7.7
13	do	1.98	11	26	do	.82	9.9
Feb. 12	do	3.15	785	Apr. 25	Ebert and Dort	1.24	35
Mar. 3	do	3.05	579	May 18	F. C. Ebert	1.19	29
8	do	3.10	642	Sept. 7	do	.72	8.5
Apr. 8	do	2.75	387	Nov. 25	do	.31	1.4
28	do	2.22	196				
May 18	do	2.02	137	1918.			
28	do	1.82	106	Jan. 6	F. C. Ebert	.30	1.2
June 8	do	1.75	96	Mar. 5	do	.34	1.4
July 8	Ellsworth and Ebert	1.39	54	17	do	2.16	118
21	F. C. Ebert	1.24	38	21	do	2.08	85
Aug. 9	do	1.02	20	22	do	2.00	78
Sept. 7	do	.85	10	Apr. 19	do	1.00	8.8
Nov. 15	do	.55	3.7	May 3	do	.86	4.5
				June 5	C. W. Sopp	.78	2.6
1917.				July 25	F. C. Ebert	.74	2.6
Jan. 16	F. C. Ebert	.65	6.0	Aug. 7	do	.76	2.6
Feb. 12	do	.61	4.8	Sept. 4	do	.87	3.0
24	do	1.35	49				

Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif, for 1896–1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1896.				1896.				1896.			
1	53	72	69	11	63	63	27	21	69	50	53
2	53	60	72	12	74	60	28	22	78	51	51
3	58	69	69	13	78	63	43	23	78	33	43
4	58	63	53	14	53	60	58	24	78	35	42
5	58	66	53	15	63	60	58	25	63	38	49
6	58	60	36	16	58	60	69	26	49	41	54
7	49	79	63	17	69	41	76	27	58	41	39
8	49	60	63	18	69	39	74	28	58	51	43
9	63	60	60	19	69	69	69	29	78	69	49
10	66	60	60	20	69	49	63	30	66	69	58
								31	72	50	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1896–97.												
1	63	33	33	58	540	126	126	101	60	64	52	.....
2	78	33	33	56	300	126	126	101	57	57	61	.....
3	60	33	35	33	204	114	114	101	60	60	61	.....
4	58	33	35	33	204	101	126	101	64	64	61	.....
5	45	33	35	33	140	91	126	101	60	60	61	.....
6	43	33	35	30	140	126	140	101	57	60	52	.....
7	53	30	35	27	140	460	153	101	57	60	52	.....
8	53	30	35	27	186	140	153	91	57	64	61	.....
9	49	30	35	27	204	140	140	81	57	67	61	.....
10	58	30	35	27	140	126	140	64	60	64	61	.....
11	63	30	35	43	101	101	170	64	60	67	61	.....
12	58	31	35	41	101	101	170	64	60	67	70	.....
13	49	30	35	48	101	101	186	64	64	64	70	.....
14	49	30	35	53	81	81	186	64	64	72	70	.....
15	50	30	35	76	81	101	170	58	67	64	70	.....
16	39	30	36	53	72	126	170	58	67	78	52	.....
17	49	30	36	81	81	101	170	52	67	67	52	.....
18	51	30	36	81	620	91	186	46	67	67	52	.....
19	51	30	36	72	300	81	186	41	67	67	52	.....
20	51	30	36	72	280	126	186	41	67	64	61	.....
21	38	31	36	81	153	91	153	41	67	60	80	.....
22	43	31	36	81	153	81	140	41	67	64	45	.....
23	42	33	35	91	140	81	126	41	64	64	34	.....
24	39	33	35	91	126	64	126	46	64	67	45	.....
25	39	51	35	91	126	72	126	41	64	67	44	.....
26	39	36	33	91	140	72	126	37	67	72	61	.....
27	170	36	33	91	114	81	114	33	67	85	52	.....
28	49	35	39	91	114	170	126	33	67	78	52	.....
29	49	35	39	91	.....	126	114	33	60	78	61	.....
30	49	35	38	101	.....	114	101	29	64	78	61	.....
31	49	.....	35	91	.....	126	.....	29	.....	78	61	.....

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1897–98.												
1	52	34	30	33	36	33	34	40	48	40	40	36
2	36	34	28	33	36	33	34	40	46	42	40	36
3	34	34	28	33	36	32	33	28	46	43	40	36
4	34	34	28	33	36	30	33	28	36	40	40	36
5	38	34	28	33	36	30	33	26	36	40	38	36
6	45	34	28	33	76	33	33	26	46	40	36	28
7	42	34	28	33	76	36	33	26	46	38	33	28
8	52	34	28	33	58	36	33	26	40	38	40	29
9	42	38	28	33	51	36	33	30	40	38	51	40
10	32	38	28	100	46	36	34	30	46	46	58	45
11	38	52	28	46	46	35	33	87	46	46	58	45
12	38	52	28	46	40	38	28	87	40	54	54	45
13	42	52	28	46	38	40	28	66	40	51	51	42
14	250	48	28	46	36	33	33	66	40	46	48	40
15	45	45	34	40	36	35	34	149	36	46	46	36
16	34	45	28	40	36	36	34	87	36	46	42	33
17	30	38	25	40	36	33	34	66	36	38	46	30
18	24	38	26	40	40	28	32	66	36	33	46	35
19	24	38	26	40	36	28	32	58	36	33	46	38
20	24	38	24	40	36	27	30	58	36	40	46	33
21	24	36	23	40	36	33	30	58	54	42	36	36
22	24	34	23	46	33	26	29	58	58	42	36	36
23	24	34	24	58	33	26	29	51	58	42	36	36
24	25	34	24	40	33	26	29	51	58	42	33	36
25	25	45	26	33	33	28	29	51	58	40	40	36
26	28	34	26	33	33	36	29	51	58	36	33	29
27	28	34	26	33	33	30	28	58	42	40	40	30
28	30	34	26	36	33	33	28	58	42	40	33	33
29	45	34	26	36	.....	33	28	58	40	40	36	36
30	45	34	26	36	.....	33	28	58	40	40	36	36
31	45	.....	26	36	.....	34	.....	51	.....	40	36	.....
1898–99.												
1	36	.....	22	22	27	27	34	24	34	22	19	12
2	33	.....	22	22	30	27	27	22	24	22	19	12
3	28	.....	22	22	30	27	24	22	25	22	19	12
4	28	.....	22	22	30	27	27	24	24	22	14	12
5	28	.....	22	22	27	27	27	25	22	22	14	12
6	26	.....	22	22	27	27	27	27	22	24	14	12
7	25	.....	22	22	27	27	27	27	22	24	12	12
8	25	.....	22	22	27	27	27	24	22	24	12	12
9	33	.....	28	22	27	27	24	20	22	24	12	12
10	33	22	22	22	27	27	24	20	20	24	12	12
11	32	22	22	34	27	27	24	22	20	24	12	12
12	30	22	22	34	27	27	24	22	20	24	12	12
13	30	22	22	34	27	24	24	24	22	24	12	12
14	30	22	22	34	27	24	22	24	22	24	12	12
15	30	22	22	27	27	24	22	22	22	22	12	12
16	.....	22	22	27	27	27	25	22	20	22	12	12
17	.....	22	22	27	27	30	24	22	22	22	12	12
18	.....	22	22	27	27	41	24	20	22	22	12	10
19	.....	22	22	27	27	34	24	20	19	22	12	10
20	.....	34	22	27	27	73	22	20	22	20	11	10
21	.....	28	22	27	27	73	22	22	22	19	11	10
22	.....	22	22	27	27	34	22	19	20	20	11	10
23	.....	22	22	27	27	34	22	20	20	20	11	11
24	.....	22	22	27	34	41	24	22	20	20	11	11
25	.....	22	22	27	27	41	25	22	22	29	12	11
26	.....	22	22	27	30	41	25	22	24	29	12	12
27	.....	22	22	27	27	48	25	20	22	22	12	12
28	.....	22	22	27	27	41	25	22	22	21	12	12
29	.....	34	22	27	.....	41	25	22	21	20	12	12
30	.....	22	22	27	.....	41	24	22	21	19	12	12
31	.....	.....	22	27	.....	34	.....	22	.....	19	12	.....

NOTE.—No record Oct. 16 to Nov. 9, 1898.

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1899–1900.												
1	12	19	24	23	20	21	20	40	25	22	11	11
2	12	19	20	23	21	21	21	35	25	25	11	11
3	12	19	20	26	21	21	25	32	23	26	11	12
4	12	19	21	36	21	22	25	30	23	23	11	12
5	12	17	19	34	22	27	25	250	25	23	11	11
6	12	17	18	30	22	25	23	a 225	23	25	11	11
7	14	18	18	23	22	25	21	a 219	22	22	11	11
8	13	18	18	22	23	25	20	a 132	23	21	11	11
9	13	18	20	21	21	23	23	a 62	22	20	11	11
10	12	18	21	23	22	22	23	43	21	20	11	11
11	12	18	18	23	22	22	22	34	21	21	11	11
12	12	17	20	23	21	21	23	a 82	20	22	11	11
13	19	18	20	25	22	22	21	a 49	20	21	11	11
14	19	18	20	26	21	22	23	37	22	23	11	11
15	18	32	20	25	21	25	22	42	21	23	11	11
16	18	19	20	21	20	22	21	41	20	21	10	11
17	18	22	29	25	21	22	20	41	20	25	11	11
18	18	26	27	21	21	21	19	37	20	25	11	11
19	18	20	28	23	23	21	19	35	19	22	11	11
20	18	22	26	25	23	20	19	35	19	21	12	11
21	18	21	24	23	21	22	32	36	21	15	12	11
22	18	49	28	25	22	22	33	32	22	13	10	11
23	18	29	36	22	22	28	30	30	22	14	10	11
24	18	20	34	22	22	26	27	27	23	14	10	12
25	19	22	20	21	21	23	23	26	23	13	10	16
26	19	21	23	20	21	23	27	25	23	12	10	14
27	19	23	24	19	21	22	30	21	23	12	10	13
28	19	20	25	20	21	21	32	20	22	13	9	12
29	19	20	25	19	.....	22	43	20	22	12	9	12
30	19	20	23	20	.....	21	43	21	20	12	10	12
31	19	.....	27	20	.....	22	.....	20	.....	11	12	.....
1900–1901.												
1	13	14	32	31	48	114	56	63	36	41	41	60
2	13	14	32	31	48	114	56	48	37	37	48	53
3	13	14	30	31	440	114	48	42	36	35	44	52
4	13	14	30	31	485	102	42	42	35	36	39	53
5	14	14	30	31	476	91	42	42	35	40	37	50
6	13	14	30	36	540	91	42	36	35	40	42	51
7	13	14	30	48	540	80	42	36	34	36	44	45
8	12	14	30	600	395	80	36	36	32	35	38	47
9	12	14	30	125	178	80	36	36	32	34	40	42
10	12	14	30	114	150	80	36	36	34	36	35	44
11	12	14	30	114	150	80	36	36	35	38	37	48
12	13	14	30	114	125	80	36	36	31	36	35	49
13	14	14	30	93	102	74	36	36	31	35	43	49
14	16	14	30	93	102	63	36	36	32	35	41	49
15	15	15	30	63	102	56	36	36	30	37	43	48
16	13	15	30	48	102	48	36	36	33	37	49	49
17	13	19	27	48	102	48	36	36	33	36	200	47
18	13	a 32	27	48	102	48	36	36	41	36	75	50
19	15	a 62	27	48	125	48	36	36	42	36	50	51
20	13	103	27	80	138	48	36	36	43	37	31	49
21	14	a1,564	27	80	138	48	36	36	41	37	34	48
22	14	a408	25	48	138	48	36	36	41	40	37	54
23	14	190	25	48	138	48	36	36	44	42	40	47
24	14	156	25	48	114	48	36	36	44	41	43	51
25	14	114	25	48	114	42	36	36	40	37	51	50
26	14	92	25	48	102	42	36	36	40	38	51	47
27	14	71	25	63	114	42	36	36	40	39	55	47
28	14	62	25	63	114	42	36	36	37	38	54	49
29	14	52	25	48	.....	42	36	31	36	37	55	48
30	14	48	25	48	.....	42	102	31	37	40	58	25
31	14	.....	25	48	.....	56	.....	31	.....	41	60	.....

a Estimated.

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901–2.												
1	51	34	24	20	20	63	42	45	32	24	24	23
2	55	36	24	22	24	485	48	44	30	32	24	25
3	50	29	24	24	22	80	48	43	29	31	26	26
4	50	26	24	23	25	63	48	43	30	31	25	29
5	49	25	24	23	27	63	56	42	27	23	25	26
6	48	25	24	23	28	31	40	40	29	23	25	24
7	46	25	25	21	27	56	42	39	26	23	26	23
8	48	25	25	23	27	43	46	40	26	25	28	23
9	47	24	24	23	27	187	36	38	26	25	30	23
10	45	30	24	22	27	102	36	38	32	25	29	24
11	42	29	24	23	28	72	33	37	34	23	28	25
12	42	26	25	23	28	72	33	34	40	26	28	23
13	44	26	24	23	28	72	31	34	39	26	28	28
14	46	25	21	23	27	72	30	38	39	27	25	27
15	48	25	22	23	28	42	30	34	47	26	25	24
16	49	26	24	23	28	29	30	35	45	24	25	23
17	51	25	25	23	28	31	29	35	45	24	25	24
18	51	24	24	23	28	31	29	35	45	25	25	24
19	51	24	23	23	27	36	30	35	44	24	24	25
20	48	26	23	24	26	31	31	33	29	24	23	26
21	50	25	24	22	26	28	56	33	27	24	22	26
22	45	24	24	24	32	31	36	32	27	24	22	24
23	48	22	24	24	33	36	37	33	26	25	22	23
24	46	24	24	45	30	48	54	33	39	25	22	23
25	44	24	24	41	33	56	49	32	35	28	23	22
26	96	23	23	28	240	63	47	34	30	26	25	22
27	65	24	23	25	80	72	46	31	32	25	22	23
28	27	24	22	26	63	68	43	31	31	30	25	23
29	24	24	22	25	.....	68	46	31	23	30	26	25
30	26	24	24	21	.....	63	44	31	23	27	27	27
31	48	.....	24	21	.....	56	.....	31	.....	26	26	.....
1902–3.												
1	31	43	23	20	102	36	4,910	112	79	47.5	56.5	52.5
2	30	23	23	20	42	36	1,060	112	79	46.5	56.0	44.5
3	31	23	23	20	42	36	565	112	79	51.5	56.5	49.0
4	33	22	22	20	36	63	345	106	79	47.5	55.5	47.5
5	37	20	22	16	36	125	345	100	79	50.0	51.5	46.0
6	36	19	22	16	36	63	200	100	79	48.0	51.0	49.0
7	34	20	22	16	42	48	179	95	76	48.0	50.5	50.5
8	37	20	21	15	42	48	169	90	76	44.5	50.5	51.0
9	42	20	21	15	48	48	142	90	76	50.0	52.5	50.0
10	43	20	21	15	48	42	112	90	73	50.0	52.0	55.0
11	44	31	27	15	55	36	112	90	73	54.5	51.0	55.5
12	42	26	21	15	55	36	112	90	70	51.5	50.0	56.5
13	36	23	21	10	55	38	112	90	70	50.0	50.0	61.0
14	36	23	22	10	55	38	106	90	65	50.0	56.5	59.0
15	35	23	21	10	55	42	106	90	62	47.5	56.5	59.0
16	33	23	22	10	42	42	126	90	60	48.0	54.0	57.5
17	32	19	19	10	42	42	179	90	58	49.5	55.0	54.5
18	32	20	21	10	36	42	160	90	56	52.5	55.5	51.0
19	34	31	24	10	36	42	142	90	56	54.0	57.5	49.5
20	36	25	22	10	36	36	142	90	56	54.0	57.5	48.0
21	40	23	24	10	42	36	142	86	56	52.0	54.5	47.0
22	39	24	24	10	42	36	126	112	56	50.5	56.0	47.5
23	49	24	26	15	42	36	119	86	50	51.0	57.5	49.5
24	51	21	23	18	42	48	126	86	50	51.0	58.0	51.5
25	55	26	23	20	42	150	126	86	48	53.5	58.0	53.0
26	27	26	24	20	42	315	126	86	48	53.5	58.5	49.5
27	49	26	25	20	42	125	126	82	48	53.5	58.0	54.5
28	50	26	21	277	42	125	126	82	46	53.5	57.5	64.0
29	47	26	24	63	.....	125	112	80	46	53.5	56.0	47.0
30	49	26	21	63	.....	150	112	79	55	56.5	54.5	50.5
31	52	.....	20	63	.....	2,450	.....	79	.....	56.0	49.5	.....

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	45.5	51.5	29.5	27	26	37	106	48	42	45	44	46
2	45.0	37.0	27.0	27	26	38	81	48	42	45	44	42
3	30.0	32.5	27.0	27	27	36	80	48	46	47	44	42
4	38.0	32.0	27.0	27	27	34	80	48	46	49	46	49
5	36.5	28.0	26.5	26	32	28	80	45	48	50	46	47
6	35.0	27.0	27.0	24	31	30	80	43	49	52	48	52
7	33.5	28.5	27.5	24	28	29	52	43	50	47	48	58
8	35.0	29.5	29.0	26	29	30	53	42	50	42	44	51
9	39.0	31.5	27.5	26	29	30	41	42	48	41	41	51
10	49.0	29.5	28.5	26	29	30	38	42	43	46	43	50
11	44.5	30.0	27.0	26	29	54	38	37	44	45	44	52
12	38.5	29.0	26.0	26	28	48	43	36	40	45	46	51
13	39.0	29.0	25.5	27	28	38	42	34	38	45	41	51
14	42.5	29.0	25.5	26	28	33	43	36	37	47	35	51
15	49.0	29.0	24.5	26	29	30	43	36	42	46	41	51
16	47.5	29.5	26.5	26	29	32	43	37	43	48	45	53
17	51.0	29.5	27.5	26	28	33	42	37	43	48	45	53
18	55.5	29.5	26.5	26	28	45	41	40	43	48	45	53
19	51.0	29.5	26.5	26	31	45	42	39	44	47	46	57
20	53.0	29.5	26.5	26	31	69	36	40	45	45	52	56
21	50.5	29.5	27.5	26	31	35	36	40	46	45	54	57
22	51.0	27.5	27.5	27	29	36	44	42	46	45	56	56
23	54.5	27.5	27.0	28	30	280	43	39	45	45	48	50
24	54.0	27.5	27.5	28	29	95	48	40	46	40	48	49
25	54.0	27.5	27.5	27	29	96	49	40	46	37	47	49
26	54.0	27.5	27.5	28	29	93	52	46	45	43	49	47
27	56.5	27.5	27.5	28	29	79	52	46	43	43	51	46
28	56.0	27.5	27.5	28	94	91	52	44	44	43	46	42
29	54.0	27.5	27.5	27	92	162	52	44	44	37	45	40
30	55.5	28.0	27.5	26	.....	161	52	41	45	39	46	40
31	55.5	.....	27.5	26	.....	109	.....	41	.....	41	46	.....
1904–5.												
1	49	22	19.3	1.5	1	1	56	20	94	3	1	1
2	56	20	19.1	1.5	154	1	99	120	94	3	1	1
3	56	20	21	1.5	122	1	99	92	94	3	1	1
4	52	21	21	1.5	202	1	24	92	94	3	1	1
5	50	21	20	1.5	234	1	24	80	94	3	1	1
6	51	22	20	1.5	68	0	24	80	86	3	1	1
7	50	20	19.8	1.5	68	0	24	92	86	3	1	1
8	48	20	22	1.5	52	0	24	135	78	3	1	1
9	46	19.1	20	80	29	0	24	120	78	3	1	1
10	44	19.6	20	5	29	0	24	120	78	3	1	1
11	37	19.5	20	1.5	20	0	24	120	70	3	1	1
12	54	20	19.8	1.5	14	1	24	120	11	3	1	1
13	48	20	19.5	1.5	10	321	20	120	21	3	1	1
14	43	21	20	1.5	8	185	20	168	11	3	1	1
15	43	21	18.4	1.5	8	143	20	168	4	3	1	1
16	43	19.6	19.9	1	202	151	20	185	4	2	1	1
17	44	20	22	1	93	168	120	185	11	2	1	1
18	50	20	21	1	35	185	92	168	11	2	1	1
19	50	17.7	20	1	35	168	106	185	8	2	1	1
20	52	18.6	20	1	25	185	13	185	8	2	1	1
21	54	19.8	19.3	42	17	168	10	168	4	2	1	1
22	56	19.8	19.7	1.5	17	151	13	120	4	2	1	1
23	52	19.8	19.7	1.5	6	92	28	120	4	2	1	1
24	56	19.5	20	1.5	1	80	28	106	4	1	1	1
25	49	18.0	21	1.5	30	80	20	135	4	1	1	1
26	46	19.3	21	1.5	0	80	20	120	4	1	1	1
27	45	19.3	20	1.5	2	68	20	120	4	1	1	1
28	49	22	20	1.5	1	51	16	151	3	1	1	1
29	41	19.3	20	1	.....	36	13	151	3	1	1	1
30	45	.....	19.9	1	.....	92	13	151	3	1	1	1
31	22	.....	23	1	.....	68	.....	151	.....	1	1	.....

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896-1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905-6.												
1	1	1	6	1	1	44	424	149	258	69	18	2.5
2	1	1	6	1	1	44	203	133	150	69	18	2.5
3	1	1	3	1	1	25	183	120	150	52	10.5	2.5
4	1	1	3	1	1	16	203	120	115	52	10.5	2.5
5	1	1	3	1	1	10	203	260	115	69	5	2.5
6	1	1	3	1	1	10	183	298	115	69	5	2.5
7	1	2	3	1	1	5	165	203	97	69	5	1
8	1	3	3	1	1	5	149	210	97	69	5	1
9	1	2	3	1	1	5	133	210	97	52	5	1
10	1	1	3	1	1	5	133	210	97	52	5	1
11	1	1	3	1	1	5	133	210	133	52	5	1
12	1	1	3	1	1	2,400	120	170	97	52	5	1
13	1	1	3	1	1	800	120	170	97	52	18	1
14	1	1	3	1	1	268	133	133	97	52	18	1
15	1	1	3	1	1	145	120	115	97	52	10.5	1
16	1	1	3	1	1	1,130	120	115	97	69	18	2.5
17	1	1	3	1	1	600	120	97	85	58	53	2.5
18	1	1	3	1	1	385	120	97	85	52	69	2.5
19	1	2	11	122	1	286	120	97	85	38	27	2.5
20	1	2	78	88	1	217	133	97	85	38	18	2.5
21	1	3	11	25	1	182	229	97	85	26	10.5	2.5
22	1	2	6	10	44	170	349	133	85	38	5	10.5
23	1	2	6	10	63	160	424	150	85	38	2.5	10.5
24	1	2	6	4	63	860	424	150	85	52	0	10.5
25	1	2	6	4	63	1,090	298	97	85	38	0	10.5
26	1	25	6	1	63	1,775	298	97	69	38	2.5	10.5
27	1	128	6	1	63	1,280	149	115	85	38	2.5	10.5
28	1	200	6	1	63	1,050	183	536	85	26	2.5	10.5
29	1	17	48	1	.....	860	349	370	69	26	2.5	10.5
30	1	6	11	1	.....	680	349	340	60	26	2.5	10.5
31	1	.....	6	1	.....	623	.....	258	.....	18	2.5	.....
1906-7.												
1	10.5	2.5	2.5	27	181	155	550	276	116	85	40	15
2	10.5	2.5	2.5	18	181	210	625	276	116	85	40	15
3	10.5	2.5	5	10	241	108	700	243	116	85	40	15
4	10.5	2.5	26	10	275	131	625	192	116	85	31	15
5	10.5	2.5	26	10	275	1,375	550	192	116	85	31	9
6	10.5	2.5	2.5	69	275	700	550	192	116	85	31	9
7	10.5	2.5	2.5	69	155	475	550	132	116	85	31	9
8	10.5	2.5	2.5	69	155	775	625	132	116	85	31	4
9	10.5	2.5	2.5	69	108	700	625	116	116	85	22	4
10	10.5	2.5	2.5	775	88	241	625	217	116	72	22	4
11	10.5	2.5	2.5	210	88	550	625	192	116	72	22	4
12	10.5	2.5	800	210	69	475	625	192	116	72	22	4
13	10.5	2.5	100	241	69	400	625	192	116	72	22	4
14	10.5	2.5	52	275	69	400	625	150	116	72	22	4
15	10.5	2.5	2.5	241	52	155	625	150	116	72	15	4
16	10.5	2.5	5	275	52	155	625	116	116	72	15	4
17	10.5	2.5	5	275	88	155	276	116	100	72	15	2
18	10.5	2.5	1	400	69	181	243	116	85	60	15	2
19	10.5	2.5	1	330	52	475	314	243	85	60	15	2
20	10.5	2.5	0	210	52	700	625	243	85	60	9	132
21	2.5	2.5	0	210	210	1,900	550	243	85	60	15	4
22	2.5	2.5	0	210	700	1,075	475	150	85	50	15	4
23	2.5	2.5	0	210	700	1,000	276	150	85	50	15	4
24	2.5	2.5	0	210	475	850	243	150	85	50	15	4
25	2.5	2.5	0	69	400	1,000	243	132	85	50	15	4
26	2.5	2.5	0	52	400	925	243	132	85	50	15	4
27	2.5	2.5	100	52	400	925	276	150	85	50	15	4
28	2.5	2.5	151	52	155	775	276	132	72	50	15	4
29	2.5	2.5	151	52	.....	700	192	132	72	40	15	4
30	2.5	2.5	0	155	.....	625	276	116	85	40	15	4
31	2.5	.....	38	69	.....	550	.....	116	.....	40	15	.....

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	4	40	4	0	9	120	78	9	2	2	2	2
2	4	40	4	0	105	105	66	9	2	2	2	2
3	4	40	2	0	105	105	43	43	2	2	2	2
4	4	72	2	0	240	120	24	24	2	2	2	2
5	9	72	2	0	91	120	16	16	2	2	2	2
6	9	72	2	0	54	54	9	16	2	2	2	2
7	4	31	2	0	33	43	9	9	2	2	2	2
8	4	9	2	0	24	43	9	5	2	2	2	2
9	4	4	2	0	16	16	5	5	2	2	2	2
10	4	31	2	0	24	9	5	2	2	2	2	2
11	4	72	2	0	24	9	5	2	2	2	2	2
12	4	72	2	0	24	9	5	2	2	2	2	2
13	4	72	2	0	16	9	16	2	2	2	2	2
14	4	72	2	0	9	9	24	2	2	2	2	2
15	4	72	2	0	78	24	16	2	2	2	2	2
16	22	72	2	0	66	24	16	2	2	2	2	2
17	15	72	2	0	66	24	16	2	2	2	2	2
18	15	72	1	0	66	105	16	2	2	2	2	2
19	15	60	1	0	66	120	9	2	2	2	2	2
20	9	60	1	0	66	120	16	2	2	2	2	2
21	9	60	1	0	66	120	9	2	2	2	2	2
22	4	60	1	0	66	120	9	2	2	2	2	2
23	9	50	1	0	66	120	78	2	2	2	2	2
24	50	50	1	120	66	105	33	2	2	2	2	2
25	22	4	1	195	66	105	33	2	2	2	2	2
26	15	4	1	91	66	33	24	2	2	2	2	2
27	15	4	1	43	78	43	24	2	2	2	2	2
28	40	4	1	120	78	43	16	2	2	2	2	2
29	40	4	1	155	174	66	24	2	2	2	2	2
30	40	4	1	120	.....	78	16	2	2	2	2	2
31	40	.....	1	120	.....	78	.....	2	.....	2	2	.....
1908–9.												
1	2	2	2	2	6	66	135	157	19	2.5	2.5	2.5
2	2	2	2	2	2.5	66	135	180	19	2.5	2.5	2.5
3	2	2	2	2	1	66	235	157	19	2.5	2.5	2.5
4	2	2	2	2	81	52	235	135	19	2.5	2.5	2.5
5	2	2	2	2	29	52	235	135	29	2.5	2.5	2.5
6	2	2	2	2	19	52	235	135	157	2.5	2.5	2.5
7	2	2	2	2	575	52	135	157	157	2.5	2.5	2.5
8	2	2	2	2	381	52	66	157	157	2.5	2.5	2.5
9	2	2	2	2	180	40	66	81	40	2.5	2.5	2.5
10	2	2	2	2	135	40	66	97	40	2.5	2.5	2.5
11	2	2	2	2	157	40	66	97	40	2.5	2.5	2.5
12	2	2	2	2	267	29	66	97	40	2.5	2.5	2.5
13	2	2	2	2	632	29	52	97	40	2.5	2.5	2.5
14	2	2	2	33	340	19	66	97	40	2.5	2.5	2.5
15	2	2	2	2	302	19	81	81	40	2.5	2.5	2.5
16	2	2	2	2	206	19	97	81	29	2.5	2.5	2.5
17	2	2	2	2	180	19	97	66	11	2.5	6	2.5
18	2	2	2	2	157	97	135	52	6	2.5	2.5	2.5
19	2	2	2	2	157	97	135	52	19	2.5	6	2.5
20	2	2	2	2	157	97	135	52	11	2.5	2.5	2.5
21	2	2	2	2	157	115	97	40	6	2.5	2.5	2.5
22	2	2	2	1,335	115	115	157	40	2.5	2.5	2.5	2.5
23	2	2	2	206	115	135	157	40	2.5	2.5	2.5	2.5
24	2	2	2	97	115	235	157	40	2.5	2.5	2.5	2.5
25	2	2	2	52	97	235	157	66	2.5	2.5	2.5	2.5
26	2	2	2	29	81	206	157	52	2.5	2.5	2.5	2.5
27	2	2	2	81	81	267	157	40	2.5	2.5	2.5	2.5
28	2	2	2	29	66	302	157	52	2.5	2.5	2.5	11
29	2	2	2	19	.....	235	157	29	2.5	2.5	2.5	2.5
30	2	2	2	11	.....	235	157	29	2.5	2.5	2.5	2.5
31	2	.....	2	11	.....	235	.....	19	.....	2.5	2.5	.....

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1913—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	2.5	2.5	2.5	[a]8,500	38	26	48	11	2	2	2	15
2	2.5	2.5	2.5	.....	38	26	74	11	2	2	2	15
3	2.5	2.5	2.5	.....	38	26	43	11	2	2	2	15
4	2.5	2.5	2.5	.....	48	26	26	11	2	2	2	4
5	2.5	2.5	2.5	.....	26	26	26	11	2	2	2	4
6	2.5	2.5	2.5	.....	48	26	18	11	2	2	2	4
7	2.5	2.5	2.5	.....	38	26	11	11	2	2	2	4
8	2.5	2.5	2.5	.....	38	26	11	11	2	2	2	4
9	2.5	2.5	425	.....	63	26	11	11	2	2	2	4
10	2.5	29	575	.....	103	26	11	11	2	2	2	8
11	2.5	2.5	97	.....	103	26	53	11	2	2	2	8
12	2.5	2.5	66	.....	103	26	63	11	2	2	2	15
13	2.5	2.5	19	.....	63	109	63	11	2	2	2	15
14	2.5	2.5	6	.....	63	109	63	11	6	2	2	8
15	2.5	19	2.5	.....	26	26	63	11	6	2	2	4
16	2.5	2.5	2.5	.....	26	26	63	11	6	85	2	15
17	2.5	2.5	2.5	.....	26	26	53	6	6	85	2	4
18	2.5	2.5	2.5	.....	26	26	53	11	6	74	2	4
19	2.5	2.5	2.5	.....	26	26	26	11	6	74	2	4
20	2.5	2.5	2.5	.....	26	26	18	11	6	63	2	4
21	2.5	2.5	2.5	.....	26	26	11	11	2	63	2	4
22	2.5	2.5	2.5	.....	26	26	11	11	2	63	2	4
23	2.5	2.5	2.5	103	26	26	6	11	2	26	2	4
24	2.5	2.5	2.5	63	26	26	6	11	2	18	2	4
25	2.5	2.5	2.5	154	26	43	11	11	2	11	2	4
26	2.5	2.5	81	123	26	43	6	2	2	6	2	4
27	2.5	2.5	81	103	26	26	6	2	2	6	2	4
28	2.5	2.5	2.5	103	26	26	6	2	2	2	2	4
29	2.5	2.5	2.5	103	.....	63	11	2	2	2	2	4
30	2.5	2.5	2.5	85	.....	48	11	2	2	2	2	4
31	2.5	.....	827	85	.....	48	.....	2	.....	2	33	.....
1910–11.												
1	4	2	2	3	193	86	240	89	29	19	1	1
2	4	2	2	3	158	86	240	89	29	19	1	1
3	4	2	2	3	127	86	240	89	29	19	1	1
4	4	2	2	3	360	290	240	89	29	19	1	1
5	4	2	2	3	213	158	240	89	29	12	1	1
6	4	2	2	3	158	142	202	89	29	12	1	1
7	4	2	2	3	142	142	202	89	29	12	1	1
8	4	2	2	3	142	290	168	71	29	12	1	1
9	4	2	2	3	127	690	137	71	29	12	1	1
10	4	2	2	175	113	1,840	137	55	29	7	1	1
11	4	2	2	62	99	1,490	168	41	137	7	1	1
12	15	2	2	16	99	990	168	41	29	7	1	1
13	15	2	2	1	99	570	137	41	29	7	1	1
14	15	2	2	1	158	435	137	41	29	7	1	1
15	2	2	2	74	158	435	137	71	29	7	1	1
16	2	2	2	62	158	375	137	55	29	12	1	1
17	2	2	2	32	99	325	111	55	29	29	1	1
18	2	2	2	3	86	325	111	55	29	19	1	1
19	2	2	2	1	86	325	111	41	29	19	1	1
20	2	2	2	0	86	290	89	41	29	12	1	1
21	2	2	2	0	74	240	89	41	29	89	1	1
22	2	2	2	0	74	240	89	41	29	89	1	1
23	2	2	2	0	86	240	89	41	29	111	1	1
24	2	2	2	0	86	240	89	41	29	111	1	1
25	2	2	2	113	74	240	89	41	29	111	1	
26	2	2	2	127	74	240	89	41	19	111	1	1
27	2	2	2	32	86	240	89	41	19	29	1	1
28	2	2	2	6	86	240	89	41	19	12	1	1
29	2	2	2	1,160	.....	240	89	41	19	1	1	19
30	2	2	2	193	.....	240	89	41	19	1	1	19
31	2	.....	2	158	.....	240	.....	29	.....	1	1	.....

[a] Computed from cross-section and slope data obtained after the high water.

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	3	1	1	1	1	1	2.4	14	2.4	1.2	1.2	2.4
2	1	1	1	1	1	1	2.4	14	2.4	1.2	1.2	2.4
3	1	1	1	1	1	1	2.4	14	1.2	1.2	1.2	2.4
4	1	1	1	1	1	1	2.4	8.5	1.2	1.2	1.2	2.4
5	1	1	1	1	1	1	2.4	8.5	1.2	1.2	1.2	2.4
6	1	1	1	1	1	280	2.4	8.5	1.2	1.2	1.2	2.4
7	1	1	1	1	1	41	2.4	8.5	1.2	1.2	1.2	2.4
8	1	1	1	1	1	12	2.4	8.5	1.2	1.2	1.2	2.4
9	1	1	1	1	1	1	14	14	1.2	1.2	1.2	2.4
10	1	1	1	1	1	240	8.5	14	1.2	1.2	1.2	2.4
11	1	1	1	1	1	71	71	14	1.2	1.2	1.2	2.4
12	1	1	1	1	1	22	42	14	1.2	1.2	1.2	1.2
13	1	1	1	1	1	55	55	14	1.2	1.2	1.2	1.2
14	1	1	1	1	1	31	55	14	1.2	1.2	1.2	1.2
15	1	1	1	1	1	31	55	14	1.2	1.2	1.2	1.2
16	1	1	1	1	1	31	55	14	1.2	1.2	1.2	1.2
17	1	1	1	1	1	89	55	8.5	1.2	1.2	1.2	1.2
18	1	1	1	1	1	8.5	42	8.5	1.2	1.2	1.2	1.2
19	1	1	1	1	1	2.4	42	8.5	1.2	1.2	1.2	1.2
20	1	1	1	1	1	2.4	31	4.5	1.2	1.2	1.2	1.2
21	1	1	1	1	1	2.4	22	4.5	1.2	1.2	1.2	1.2
22	1	1	1	1	1	2.4	14	4.5	1.2	1.2	1.2	1.2
23	1	1	1	1	1	2.4	14	4.5	1.2	1.2	1.2	1.2
24	1	1	1	1	1	2.4	14	2.4	1.2	1.2	1.2	1.2
25	1	1	1	1	1	2.4	14	2.4	1.2	1.2	1.2	1.2
26	1	1	1	1	1	2.4	14	2.4	1.2	1.2	8.5	1.2
27	1	1	1	1	1	2.4	22	2.4	1.2	1.2	8.5	1.2
28	1	1	1	1	1	2.4	22	2.4	1.2	1.2	2.4	1.2
29	1	1	1	1	1	2.4	22	2.4	1.2	1.2	2.4	1.2
30	1	1	1	1	.....	8.5	14	2.4	1.2	1.2	2.4	1.2
31	1	.....	1	1	.....	2.4	.....	2.4	.....	1.2	2.4	.....
1912–13.												
1	1.2	1.2	1.2	1.2	1.2	2.4	1.2	1.8	1.8	1.2	1.2	1.2
2	1.2	1.2	1.2	1.2	1.2	2.4	1.2	1.8	1.8	1.2	1.2	1.2
3	1.2	1.2	1.2	1.2	1.2	2.4	1.2	1.8	1.8	1.2	1.2	1.2
4	1.2	1.2	1.2	1.2	1.2	2.4	1.2	1.8	1.8	1.2	1.2	1.2
5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	1.2	1.2
6	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	1.2	1.2
7	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	1.2	1.2
8	1.2	1.2	1.2	1.2	4.5	1.2	1.2	1.8	1.8	1.2	1.2	1.2
9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	1.2
10	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	1.2
11	1.2	2.4	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	1.2
12	1.2	2.4	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	1.2
13	1.2	2.4	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	1.2
14	1.2	2.4	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	1.2
15	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	1.2	1.2	.9
16	1.2	1.2	1.2	2.4	1.2	1.2	1.8	1.8	1.2	1.2	1.2	.9
17	1.2	1.2	1.2	2.4	1.2	1.2	1.8	1.8	1.2	1.2	1.2	.9
18	1.2	1.2	1.2	2.4	1.2	1.2	1.8	1.8	1.2	89	1.2	.9
19	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	80	1.2	.9
20	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	89	1.2	.9
21	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	80	1.2	.9
22	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	80	1.2	.9
23	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	89	1.2	.9
24	1.2	1.2	1.2	1.2	1.2	1.2	1.8	1.8	1.2	89	1.2	.9
25	1.2	1.2	1.2	1.2	4.5	1.2	1.8	1.8	1.2	89	1.2	.9
26	1.2	1.2	1.2	1.2	4.5	1.2	1.8	1.8	1.2	63	1.2	.9
27	1.2	1.2	1.2	1.2	4.5	1.2	1.8	1.8	1.2	1.8	1.2	.9
28	1.2	1.2	1.2	1.2	2.4	1.2	1.8	1.8	1.2	1.8	1.2	.9
29	1.2	1.2	1.2	1.2	.....	1.2	1.8	1.8	1.2	1.8	1.2	.9
30	1.2	1.2	1.2	1.2	.....	1.2	1.8	1.8	1.2	1.8	1.2	.9
31	1.2	.....	1.2	1.2	.....	1.2	.....	1.8	.....	1.2	1.2	.....

NOTE.—Daily discharge determined from a well-defined rating curve.

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.9	0.6	0.9	0.6	110	119	27	108	47	18	2	2
2	.9	.6	.9	.6	84	108	24	108	59	13	2	2
3	.9	.6	.9	.6	53	108	24	108	58	13	2	2
4	.9	.6	.9	.6	37	96	23	96	58	13	2	2
5	.9	.6	.9	.6	18	76	40	96	58	13	2	2
6	.9	.6	.9	.6	14	76	40	86	57	13	2	2
7	.6	.6	.9	.6	10	76	59	86	56	13	2	1
8	.6	.6	.6	.6	10	68	40	76	55	10	2	1
9	.6	.6	.6	.6	10	68	40	76	48	10	2	1
10	.6	.6	.6	.6	10	68	39	68	36	10	2	1
11	.6	.6	.6	.6	7	68	38	68	29	10	2	1
12	.6	.6	.6	.6	4	67	46	60	28	10	2	1
13	.6	31	.6	.6	4	60	45	60	26	10	2	1
14	.6	1.2	.6	.6	4	51	45	60	26	10	2	1
15	.6	9	.6	171	2	50	44	60	26	3	2	1
16	.6	.6	.6	325	2	50	38	59	26	3	2	1
17	.6	.6	.6	50	2	49	31	58	26	3	2	1
18	.6	.6	.6	32	30	48	32	58	25	3	2	1
19	.6	12	.6	156	355	48	34	57	25	3	2	1
20	.6	12	.6	118	1,320	47	36	56	25	2	2	1
21	.6	4.5	.6	15	2,190	46	37	55	25	2	2	1
22	.6	1.2	.6	12	624	46	51	48	25	2	2	1
23	.6	1.2	.9	7	388	45	38	47	22	2	2	1
24	.6	.9	.9	7	206	39	39	46	22	2	2	1
25	.6	.9	.9	97	27	38	35	45	22	2	2	1
26	.6	.9	.9	1,020	27	37	31	39	18	2	2	1
27	.6	.9	.9	760	132	37	28	38	18	2	2	1
28	.6	.9	.6	315	132	40	24	38	18	2	2	1
29	.6	.9	.6	204	.....	40	200	37	18	2	2	1
30	.6	.9	.6	170	.....	36	142	48	[a] 18	2	2	1
31	.6	.....	.6	138	.....	28	.....	48	.....	2	2	.....
1914–15.												
1	1.7	1.7	1.8	1.8	198	100	121	198	198	100	29	4
2	1.7	1.7	1.8	1.8	121	100	144	260	228	100	29	4
3	1.7	1.7	1.8	1.8	121	100	144	198	228	100	29	4
4	1.7	1.7	1.8	1.8	121	100	170	198	190	100	29	4
5	1.7	1.7	1.8	1.8	121	100	170	198	170	100	29	4
6	1.7	1.7	1.8	1.8	121	100	144	198	170	100	21	3
7	1.7	1.7	1.8	1.8	121	64	121	198	170	100	21	3
8	1.7	1.7	1.8	1.8	121	64	121	198	170	100	21	3
9	1.7	1.7	1.8	1.8	144	64	121	198	170	100	21	2.5
10	1.7	1.7	1.8	1.8	870	64	121	228	170	100	18	2.5
11	1.7	1.7	3.0	1.8	870	64	144	228	170	100	18	2.5
12	1.7	1.7	1.8	1.8	510	64	170	260	170	100	18	2.5
13	1.7	1.7	1.8	1.8	510	64	170	295	144	100	18	2
14	1.7	1.7	1.8	1.8	510	64	170	260	144	81	18	2
15	1.7	1.7	1.8	1.8	144	64	144	260	144	72	18	2
16	1.7	1.7	1.8	46	144	64	144	228	144	72	15	2
17	1.7	1.7	1.8	1.8	144	100	144	260	144	64	15	2
18	1.7	1.7	1.8	1.8	100	100	144	260	144	64	15	2
19	1.7	1.7	1.8	1.8	100	100	170	260	144	64	15	2
20	1.7	1.7	1.8	1.8	100	100	170	260	121	64	10	1.5
21	1.7	1.7	1.8	1.8	100	100	228	260	121	57	5.5	1.5
22	1.7	1.7	3.0	1.8	100	100	170	269	121	57	5.5	1.5
23	1.7	1.7	1.8	1.8	100	144	170	260	121	50	5.5	1
24	1.7	1.7	1.8	1.8	100	144	170	198	121	64	5.5	1
25	1.7	1.7	1.8	1.8	100	170	170	198	121	64	5.5	1
26	1.7	1.7	1.8	1.8	100	144	170	198	121	57	5.5	1
27	1.7	1.7	1.8	1.8	100	121	170	198	121	50	5.5	1
28	1.7	1.7	1.8	1.8	100	121	170	198	100	38	5.5	1
29	1.7	1.7	1.8	330	.....	198	228	198	100	38	5	1
30	1.7	1.7	1.8	198	.....	170	198	198	100	38	5	1
31	1.7	.....	1.8	198	.....	144	.....	198	.....	38	4	.....

[a] Interpolated.

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Daily discharge, in second-feet, of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	1.0	2.0	2.3	3.5	.....	595	410	200	109	66	25	18
2	1.0	2.2	2.3	16	.....	595	410	200	109	64	24	16
3	1.0	2.2	2.3	14	.....	595	410	200	104	64	23	16
4	1.0	2.2	26	3.1	.....	595	410	200	101	64	23	14
5	1.0	2.2	2.7	2.7	.....	1,300	410	187	99	60	23	13
6	2.0	2.2	3.5	41	.....	1,000	385	200	99	58	23	12
7	2.0	2.2	3.1	5.5	.....	760	385	187	84	55	21	13
8	2.0	2.2	2.7	6.5	.....	700	360	187	82	55	19	13
9	2.0	2.2	2.7	228	.....	700	360	187	80	55	18	16
10	2.0	2.5	2.3	163	.....	700	385	187	82	49	20	16
11	2.0	2.5	2.3	15	700	700	385	187	84	47	22	16
12	2.0	2.5	2.3	22	700	700	385	187	101	49	23	16
13	2.0	2.5	2.3	5	700	700	360	187	94	45	18	16
14	2.0	2.5	2.5	2.5	700	640	360	187	91	59	17	20
15	2.0	2.2	3.1	47	700	640	360	187	91	55	19	20
16	2.0	2.2	15	35	700	640	338	187	88	51	20	18
17	2.0	2.2	15	985	700	640	338	142	88	51	20	18
18	2.0	2.2	2.5	.....	835	640	338	153	87	51	20	18
19	2.0	2.2	2.5	.....	835	595	338	187	87	39	20	18
20	2.0	2.2	2.5	.....	835	640	315	187	87	39	20	28
21	2.0	2.2	2.5	.....	700	1,090	315	241	87	36	20	18
22	2.0	2.2	2.5	.....	700	1,000	338	142	87	34	19	17
23	2.0	2.2	2.5	.....	835	1,090	315	136	87	34	18	16
24	2.0	2.3	2.5	.....	835	1,090	275	136	87	43	17	16
25	2.0	2.3	2.5	.....	835	1,000	241	136	85	39	17	19
26	2.0	2.3	2.5	.....	700	1,000	200	130	85	36	19	20
27	2.0	2.3	2.5	.....	595	910	200	130	82	31	20	20
28	2.0	2.3	2.5	.....	595	835	200	126	80	29	20	20
29	2.0	2.3	2.5	.....	595	700	200	126	77	28	20	20
30	2.0	2.3	3.1	.....	.....	440	200	113	77	28	19	21
31	2.0	.....	3.5	.....	.....	410	.....	113	.....	26	18	.....
1916–17.												
1	21	18	3.4	4.2	5	25	26	70	4.5	5	4.2	12
2	28	18	3.4	4.2	5	23	19	67	3.9	5	11	12
3	31	18	3.4	9	5	15	18	64	3.9	3.9	9	9
4	26	18	3.4	6.5	5	12	18	68	3.9	8	13	9
5	18	16	3.4	6.5	5	9	18	73	3.6	4.2	11	8.5
6	28	6.5	3.4	5.5	5	8	18	73	3.6	4.2	10	8
7	21	6	3.6	5	4.5	6.5	18	69	3.0	4.2	12	8
8	19	6	3.6	4.5	4.5	6.5	67	72	3.0	5	14	7.5
9	19	4.2	3.6	4.5	4.5	7	26	60	3.0	5	14	6
10	14	2.3	3.6	4.8	4.5	14	31	58	3.0	4.5	17	6
11	8.5	1.1	3.4	4.8	4.5	14	26	52	3.0	5	19	5.5
12	7	3.9	3.4	4.5	4.8	13	24	49	2.9	5	39	3.0
13	7.5	3.9	3.4	5	4.8	10	24	49	2.8	5	29	4.4
14	7.5	3.9	3.4	4.5	5.5	9.5	24	45	3.3	5.5	19	5.5
15	19	3.8	3.4	6	5.5	8.5	31	43	3.3	6	17	8
16	31	3.8	3.4	6	6	7.5	35	43	3.3	5.5	15	7
17	29	3.8	3.4	6	8	6.5	32	41	18	5	12	8
18	29	3.8	3.4	6.5	8	6	29	34	4.2	4.5	9.5	6
19	28	3.8	3.4	62	8	7	25	31	3.9	3.6	5	6
20	24	3.8	3.4	17	8	9.5	25	34	3.6	3.3	3.9	5.5
21	21	3.6	3.4	13	9.5	10	26	24	3.6	3.3	4.5	6
22	18	3.6	3.4	11	113	10	27	15	4.2	3.3	4.2	5.5
23	17	3.6	3.4	8	88	10	29	14	6	3.3	6	7.5
24	17	3.6	3.4	7	51	9	32	14	7.5	5	15	8.5
25	18	3.6	20	6.5	164	7.5	37	18	7	6.5	16	7.5
26	18	3.6	11	6.5	91	12	43	15	6.5	6	12	6
27	18	3.6	6	6	58	16	43	9	5.5	5.5	12	4.5
28	15	3.6	5	6	32	25	64	6.5	5	14	10	5
29	13	3.6	5	6	.....	32	72	5.5	5	11	9.5	4.8
30	18	3.4	5	8	.....	39	73	5.5	5	7.5	9	3.6
31	18	.....	4.8	5.5	.....	34	.....	4.5	.....	5	9	.....

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Daily discharge, in second-feet, of Santa Ana River, near Mentone, Calif., for 1896–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	9.5	1.6	2.5	1.4	1.2	1.3	39	6.5	2.8	2.8	2.1	6
2	10	1.6	4.5	1.4	1.2	1.3	43	5.5	11	3.2	2.4	3.1
3	9	1.7	5.5	1.5	1.2	1.4	39	5.5	2.8	3.0	4.0	3.1
4	8.5	2.0	10	1.5	1.2	1.4	32	4.5	2.8	2.8	1.5	2.9
5	6.5	1.6	44	1.4	1.2	1.6	23	6	2.7	3.0	1.5	2.2
6	4.5	4.2	21	1.2	1.2	19	21	7.5	2.6	2.8	1.8	2.2
7	8	2.0	2.6	1.2	1.3	2,390	20	7.5	2.4	2.7	2.2	2.2
8	6	1.6	2.3	1.2	1.3	545	20	9.5	2.2	15	2.2	2.2
9	6	1.6	1.8	1.3	1.3	123	19	10	2.2	18	2.4	2.2
10	6.5	1.4	1.6	1.4	1.3	1,860	16	6	2.2	7	5.5	22
11	3.9	1.4	1.5	1.2	1.3	1,770	15	4.5	2.4	6	3.5	6
12	4.8	1.3	1.4	1.2	1.3	3,970	16	3.8	2.6	5	2.2	3.3
13	9.5	1.3	1.4	1.2	1.4	1,810	29	3.8	2.7	4.0	2.0	3.6
14	9.5	1.2	1.4	1.2	1.4	495	25	6.5	2.8	2.2	2.8	4.6
15	5.5	1.1	1.4	1.2	1.4	278	16	7	3.8	2.1	5.5	6.5
16	6	1.2	1.5	1.2	1.4	184	12	6	17	2.0	9	8
17	6	1.4	1.5	1.2	1.8	123	10	7	20	1.8	10	7.5
18	4.2	1.4	1.4	1.2	6	80	8.5	6.5	6.5	1.6	8	7
19	3.0	1.4	1.3	1.4	20	112	8.5	7	4.5	1.5	4.5	6
20	2.4	1.3	1.3	1.2	1.8	109	9	4.8	3.2	1.5	3.8	4.3
21	2.0	1.4	1.4	1.1	1.7	80	9	4.0	2.2	1.6	3.2	4.0
22	1.8	1.4	1.5	1.1	37	80	11	3.2	2.1	1.8	3.0	6.5
23	3.0	1.4	1.4	1.3	11	78	7.5	3.2	2.1	2.0	2.8	5.5
24	3.2	1.4	1.4	1.1	2.0	70	8.5	2.8	2.1	2.1	2.8	4.0
25	4.8	1.3	1.4	1.2	1.6	68	8.5	2.8	2.1	2.0	2.6	2.2
26	5	1.3	1.3	1.4	1.6	62	9	2.8	2.2	1.7	2.7	2.0
27	3.6	1.3	1.3	1.2	1.4	62	9	3.5	2.2	1.4	2.4	2.2
28	3.3	1.3	1.3	1.2	1.4	49	8.5	6.5	2.4	1.4	2.0	2.2
29	2.2	1.2	1.2	1.2	.....	39	8	6.5	2.4	1.4	1.8	2.0
30	1.8	1.2	1.3	1.2	.....	39	7.5	4.2	2.7	1.4	6	2.0
31	1.8	.....	1.4	1.2	.....	40	.....	3.0	.....	1.4	15	.....

NOTE.—No record: Sept. 1–30, 1897; Oct 16 to Nov. 9, 1898. Interpolated June 30, 1914; Jan. 18 to Feb. 10, 1916 (gage out). Sept. 4–6, 1917, no record—discharge interpolated. Discharge estimated from discharge measurements Oct. 1, 1914, to Jan. 28, 1915. No gage height record July 10–12 and 26, 1918—discharge estimated.

Monthly discharge of Santa Ana River near Mentone, Calif., for 1896–1918

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1896.				
July	78	49	64	3,935
August	79	33	56	3,443
September	76	27	55	3,273
The period	.....	.....	.....	10,700
1896–97.				
October	170	38	54	3,320
November	51	30	33	1,964
December	39	33	35	2,152
January	101	27	63	3,874
February	620	72	181	10,062
March	460	64	117	7,194
April	186	101	146	8,688
May	101	29	61	3,751
June	67	57	63	3,749
July	85	57	67	4,120
August	80	34	58	3,566
September	61	38	47	2,797
The year	620	27	77.2	55,200
1897–98.				
October	250	24	42	2,582
November	52	34	38	2,261
December	34	23	27	1,660
January	100	33	40	2,460
February	76	33	40	2,221
March	40	26	32	1,968
April	34	28	31	1,845
May	140	26	55	3,382
June	58	36	44	2,618
July	54	33	41	2,521
August	58	33	42	2,582
September	45	28	36	2,142
The year	250	24	39.1	28,500
1898–99.				
October	36	19	25	1,500
November	34	18	22	1,300
December	28	22	22	1,353
January	34	22	26	1,599
February	34	27	28	1,555
March	73	24	34	2,091

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Monthly discharge of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1898–99—Con.				
April	34	22	25	1,488
May	27	19	22	1,353
June	34	19	22	1,309
July	29	19	22	1,353
August	19	11	13	799
September	12	10	12	714
The year	73	10	22.6	16,300
1899–1900.				
October	19	12	16	984
November	49	17	21	1,260
December	36	18	23	1,414
January	36	19	23	1,414
February	23	20	21	1,166
March	28	20	23	1,414
April	43	19	25	1,488
May	250	20	57	3,505
June	25	19	22	1,309
July	25	11	19	1,168
August	12	9	11	676
September	16	11	12	714
The year	250	9	22.9	16,500
1900–1902.				
October	16	12	13	799
November	1,564	14	107	6,367
December	32	25	28	1,772
January	600	31	78	4,796
February	540	48	194	10,774
March	114	45	68	4,181
April	107	39	43	2,559
May	68	35	42	2,582
June	44	30	37	2,202
July	42	34	38	2,337
August	200	31	50	3,074
September	60	42	49	2,916
The year	1,564	12	62.3	44,400
1901.				
October	96	24	48	2,951
November	36	22	26	1,547
December	25	21	24	1,476
The period	.....	.....	.....	5,790
1905.				
January	80	1	5.32	327
February	234	0	53.0	2,940
March	321	0	79.9	4,910
April	120	10	35.4	2,110
May	185	20	131	8,050
June	94	3	35.7	2,120
July	3	1	2.23	137
August	1	1	1.09	61.5
September	1	1	1.00	59.5
The period	.....	.....	.....	20,700
1905–6.				
October	1	1	1.0	61.5
November	200	1	13.8	821
December	78	3	8.6	529
January	122	1	9.3	572
February	63	1	15.8	877
March	2,400	5	488	30,000
April	424	120	209	12,400
May	536	97	179	11,000
June	258	69	102	6,070
July	69	18	48.2	2,960
August	69	0	11.7	719
September	10.5	1	4.45	265
The year	2,400	0	91.6	66,300

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906–7.				
October	19.5	2.5	7.66	471
November	2.5	2.5	2.50	149
December	800	.0	47.8	2,940
January	775	10	166	10,200
February	700	52	216	12,000
March	1,900	108	608	37,400
April	700	192	476	28,300
May	276	116	170	10,500
June	116	72	101	6,010
July	85	40	66.2	4,070
August	40	9	21.2	1,300
September	132	2	10.0	595
The year	1,900	.0	157	114,000
1907–8.				
October	50	4	13.9	855
November	72	4	45.0	2,680
December	4	1	1.68	103
January	195	0	31.1	1,910
February	240	9	65.8	3,780
March	120	9	67.7	4,160
April	78	5	22.3	1,330
May	43	2	5.81	357
June	2	2	2.00	119
July	2	2	2.00	123
August	2	2	2.00	123
September	2	2	2.00	119
The year	240	0	21.6	15,700
1908–9.				
October	2	2	2.00	123
November	2	2	2.00	119
December	2	2	2.00	123
January	1,335	2	62.7	3,860
February	575	1	171	9,500
March	302	19	107	6,580
April	235	52	133	7,910
May	180	19	84.2	5,180
June	157	2.5	32.0	1,900
July	2.5	2.5	2.50	154
August	6	2.5	2.73	168
September	11	2.5	2.78	165
The year	1,335	1	49.4	35,800
1909–10.				
October	2.5	2.5	2.50	154
November	29	2.5	3.93	234
December	827	2.5	72.0	4,430
January 23–31	154	63	102	1,820
February	103	26	41.9	2,330
March	109	26	35.1	2,160
April	74	6	29.4	1,750
May	11	2	9.1	560
June	6	2	2.9	173
July	85	2	19.7	1,210
August	33	2	3.0	184
September	15	4	6.6	393
1910–11.				
October	15	2	4.0	246
November	2	2	2.0	119
December	2	2	2.0	123
January	1,160	0	72.4	4,450
February	360	74	125	6,940
March	1,840	86	381	23,400
April	240	89	141	8,390
May	89	29	56.2	3,460
June	137	19	30.9	1,840
July	111	1	30.2	1,860
August	1	1	1.0	61.5
September	19	1	2.2	131
The year	1,840	0	70.6	51,000

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Monthly discharge of Santa Ana River near Mentone, Calif., for 1896–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1911–12.				
October	3	1	1.1	68
November	1	1	1.0	60
December	1	1	1.0	61.5
January	1	1	1.0	61.5
February	1	1	1.0	58
March	280	1	30.8	1,890
April	71	2.4	23.9	1,420
May	14	2.4	8.36	514
June	2.4	1.2	1.28	76.2
July	1.2	1.2	1.20	73.8
August	8.5	1.2	1.83	113
September	2.4	1.2	1.64	97.6
The year	280	1	6.19	4,490
1912–13.				
October	1.2	1.2	1.20	74
November	2.4	1.2	1.36	81
December	1.2	1.2	1.20	74
January	2.4	1.2	1.32	81
February	4.5	1.2	1.71	95
March	2.4	1.2	1.35	83
April	1.8	1.2	1.52	90
May	1.8	1.8	1.80	111
June	1.8	1.2	1.36	81
July	89	1.2	25.1	1,540
August	1.2	1.2	1.20	74
September	1.2	.9	1.04	62
The year	89	.9	3.38	2,450
1913–14.				
October	.9	.6	.66	41
November	31	.6	26.4	157
December	.9	.6	.72	44
January	1,020	.6	116	7,130
February	2,190	2	208	11,600
March	119	28	59.1	3,630
April	200	23	45.7	2,720
May	108	37	64.3	3,950
June	59	18	33.3	1,980
July	18	2	6.6	406
August	2	2	2.0	123
September	2	1	1.2	71
The year	2,190	.6	43.9	31,900
1914–15.				
October	1.7	1.7	1.70	105
November	1.7	1.7	1.70	101
December	3.0	1.8	1.88	116
January	330	1.8	26.5	1,630
February	870	100	214	11,900
March	198	64	103	6,330
1914–15.				
April	228	121	160	9,520
May	295	198	226	13,900
June	228	100	150	8,930
July	100	38	75.2	4,620
August	29	4.0	15.0	922
September	4	1.0	2.18	130
The year	870	1.0	80.3	58,200
1915–16.				
October	2.0	1.0	1.84	113
November	2.5	2.0	2.27	135
December	26	2.3	4.16	256
January 1–17	935	2.5	90.9	3,060
February 11–29	835	595	726	27,400
March	1,300	410	763	46,900
April	410	260	331	19,700
May	241	113	170	10,500
June	109	77	89.4	5,320
July	66	26	46.5	2,860
August	25	17	20.2	1,240
September	28	12	17.4	1,040
1916–17.				
October	31	7	19.6	1,210
November	18	1.1	6.15	366
December	20	3.4	4.49	276
January	62	4.2	8.40	516
February	164	4.5	25.6	1,420
March	39	6	13.6	836
April	73	18	32.7	1,950
May	73	4.5	39.5	2,430
June	18	2.8	4.63	276
July	14	3.3	5.41	333
August	39	3.9	12.6	775
September	12	3.0	6.79	404
The year	164	1.1	14.9	10,800
1917–18.				
October	10	1.8	5.22	321
November	4.2	1.1	1.52	90.4
December	44	1.2	4.03	248
January	1.5	1.1	1.25	76.9
February	37	1.2	3.85	214
March	3,970	1.3	469	28,800
April	42	7.5	16.9	101
May	10	2.8	5.42	333
June	20	2.1	4.06	242
July	18	1.4	3.43	211
August	15	1.5	3.91	240
September	22	2.0	4.58	273
The year	3,970	1.1	44.3	31,200

NOTE.—For records 1902–1904, see monthly discharge of Santa Ana River and canals near Mentone, Calif., p. 258.

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Combined daily discharge, in second-feet, of Santa Ana River and canals near Mentone, Calif., for 1909-1918.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909.									
1	42	82	142	211	233	92	76	76	66
2	40	78	142	211	256	92	74	62	58
3	40	75	142	311	233	92	76	58	56
4	40	157	128	311	209	92	72	58	54
5	39	105	128	311	208	102	72	58	56
6	41	95	128	311	208	157	72	62	56
7	39	651	128	211	230	157	72	64	58
8	39	437	128	142	230	157	76	66	58
9	37	256	116	142	154	100	66	64	56
10	65	211	116	142	170	100	72	64	58
11	51	233	116	142	170	105	66	58	66
12	50	343	105	142	170	105	66	58	66
13	68	632	105	128	170	105	66	64	62
14	101	340	95	142	170	105	66	62	62
15	66	302	95	157	154	105	66	64	60
16	62	282	95	173	154	94	62	62	62
17	60	256	95	173	139	89	62	72	56
18	51	233	173	211	125	82	64	70	62
19	50	233	173	211	125	97	64	69	66
20	48	233	173	211	125	89	64	64	68
21	79	233	191	173	113	82	62	64	62
22	1,380	191	191	233	113	84	64	62	62
23	282	191	211	233	113	82	64	64	60
24	173	191	311	233	113	82	78	70	64
25	128	173	311	233	139	82	74	70	60
26	105	157	282	233	125	80	70	68	66
27	157	157	343	233	113	80	70	70	60
28	105	142	378	233	125	78	70	62	80
29	95	.....	311	233	102	76	66	60	68
30	87	.....	311	233	102	76	70	60	66
31	87	.....	311	.....	92	.....	76	66	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10.												
1	64	58	52	a8,500	112	90	122	89	75	59	57	73
2	64	58	54	.....	110	92	140	89	74	60	59	73
3	68	54	56	.....	110	98	107	89	74	59	60	74
4	62	54	44	.....	121	100	98	89	74	58	53	58
5	56	52	46	.....	99	102	97	89	57	58	57	55
6	56	52	52	.....	116	98	90	90	76	65	58	59
7	50	50	52	.....	114	98	89	87	74	61	59	59
8	50	48	54	.....	111	98	90	77	74	61	61	64
9	62	52	497	.....	139	98	89	89	73	61	61	60
10	60	85	641	.....	179	94	90	87	74	58	64	68
11	58	56	173	.....	177	94	132	87	70	57	60	66
12	62	50	142	.....	166	94	137	87	65	64	57	75
13	62	52	93	.....	131	109	141	87	73	58	58	73
14	60	60	79	.....	136	109	141	87	77	66	61	66
15	62	77	76	.....	94	99	142	84	79	68	57	64
16	62	62	74	.....	94	103	141	87	79	85	58	77
17	60	56	68	.....	94	105	131	79	77	85	60	64
18	58	56	62	.....	94	104	130	88	72	74	59	56
19	58	54	40	.....	99	103	103	89	70	74	70	56
20	58	54	68	.....	90	104	95	88	71	63	68	63
21	60	3	74	.....	99	104	88	87	68	63	70	63
22	52	3	66	.....	98	105	88	87	62	63	68	59
23	48	54	70	167	92	105	79	87	66	69	66	66
24	54	52	80	129	92	100	79	87	62	72	64	68
25	56	48	80	219	92	108	84	85	62	66	62	62
26	56	60	158	185	90	114	84	80	59	60	61	63
27	56	66	160	165	88	96	79	75	61	60	65	64
28	58	48	76	181	90	98	84	76	61	68	64	64
29	54	56	72	181	.....	131	90	76	61	70	65	64
30	56	60	72	164	.....	119	89	75	62	65	62	74
31	54	.....	897	164	.....	118	.....	75	.....	65	95	.....

a Estimated.

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Combined daily discharge, in second-feet, of Santa Ana River and canals near Mentone, Calif., for 1909–1918.—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	72	54	45	44	261	158	313	189	103	96	65	61
2	63	48	44	45	230	158	313	160	103	95	71	66
3	61	47	46	43	198	158	313	161	103	95	67	66
4	62	50	44	43	431	362	313	161	103	95	66	58
5	61	46	46	44	284	231	312	163	101	86	66	58
6	55	47	45	44	229	215	275	163	101	88	66	58
7	59	46	43	44	213	214	275	163	101	86	65	60
8	62	44	43	43	213	362	229	145	102	86	64	62
9	61	45	43	43	199	761	229	145	101	88	63	62
10	62	43	44	248	185	1,200	210	129	101	83	61	66
11	66	44	45	130	172	1,470	241	115	137	83	66	66
12	73	43	43	84	171	972	241	115	107	83	67	66
13	73	44	44	59	171	642	209	115	105	83	67	67
14	71	50	43	56	231	508	210	115	105	80	67	67
15	60	54	43	146	230	507	208	145	106	81	67	71
16	56	50	43	133	230	448	207	129	106	86	67	69
17	56	47	43	90	171	397	182	131	106	105	66	70
18	59	47	46	74	158	398	183	129	103	93	66	66
19	53	46	46	65	159	398	182	115	106	95	59	70
20	48	46	47	62	159	353	161	114	106	88	60	64
21	61	45	45	59	146	312	161	115	106	89	60	60
22	66	47	44	57	146	312	160	115	105	89	59	59
23	56	46	46	55	159	312	161	115	105	111	58	59
24	56	46	45	62	158	313	160	115	106	111	60	58
25	60	44	43	186	146	313	159	115	106	111	63	57
26	65	53	45	127	146	313	160	115	96	111	67	65
27	67	50	45	103	158	313	160	114	95	73	67	70
28	61	50	44	76	158	313	160	113	95	78	67	73
29	61	45	44	1,220	.....	313	160	114	96	73	67	92
30	60	44	45	263	.....	313	160	115	96	67	63	91
31	58	.....	43	230	.....	313	.....	108	.....	71	61	.....
1911–12.												
1	79	52	45	47	44	39	68.4	93	71.4	63.2	56.7	58.4
2	63	50	47	49	43	44	73.4	96	71.4	52.2	54.7	56.4
3	60	50	39	46	43	44	73.4	93	69.7	55.2	54.7	54.4
4	59	55	49	46	40	54	75.4	87.5	67.7	55.2	54.2	50.4
5	57	55	46	46	43	50	73.4	87.5	64.7	52.2	60.2	54.4
6	55	52	48	46	42	351	75.4	88.5	64.7	48.2	62.2	55.4
7	55	50	47	46	42	112	73.4	85.5	64.7	47.2	62.2	55.4
8	51	50	48	49	42	83	75.4	88.5	62.7	59.2	64.2	55.4
9	52	51	48	47	40	66	92	94	60.7	60.4	62.2	55.4
10	53	51	48	45	40	311	86.5	94	61.2	60.4	60.2	60.4
11	52	61	42	45	40	142	150	94	59.2	59.4	62.2	62.4
12	64	52	48	46	40	88	120	94	63.2	63.4	64.7	63.2
13	66	51	46	46	42	126	132	94	55.2	62.4	62.7	64.7
14	66	51	44	44	40	102	135	94	61.2	66.4	63.7	64.7
15	64	50	46	44	40	104	135	94	59.2	65.4	66.2	64.7
16	66	50	45	44	40	102	137	89	59.2	64.4	66.2	60.7
17	66	50	46	46	42	89	135	88.5	54.2	68.4	60.2	57.7
18	68	50	48	43	42	78.5	121	88.5	54.2	61.4	58.2	60.7
19	63	50	48	43	40	75.4	121	88.5	54.2	62.4	53.2	59.7
20	65	51	46	44	40	65.4	110	84.5	61.2	56.4	60.2	59.7
21	62	50	46	42	41	73.4	104	84.5	61.2	59.7	60.2	59.7
22	60	47	46	42	38	73.4	94	81	61.2	58.7	60.2	59.7
23	59	48	46	43	41	68.4	94	76	63.2	61.7	60.2	61.7
24	55	50	46	42	41	65.4	94	78.9	65.2	61.7	62.2	63.7
25	61	48	47	42	38	67.4	94	78.9	63.2	65.7	61.2	59.7
26	64	48	45	42	38	67.4	94	78.9	65.2	65.7	61.5	57.7
27	72	48	45	43	40	68.4	102	75.9	68.2	65.7	61.5	59.7
28	58	48	46	44	40	68.4	101	75.9	68.2	63.7	57.4	59.7
29	57	48	51	43	39	68.4	96	78.9	65.2	65.7	56.4	61.7
30	55	48	47	44	.....	79.5	93	78.9	73.2	65.7	58.4	59.7
31	52	.....	47	44	.....	75.4	.....	77.4	.....	63.7	58.4	.....

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Combined daily discharge, in second-feet, of Santa Ana River and canals near Mentone, Calif., for 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	57	46	45	36	37	50	72	51	59	59	56	57
2	60	34	36	36	35	49	75	59	57	61	59	54
3	62	44	33	37	35	50	69	59	56	62	61	56
4	53	39	36	37	35	54	64	59	59	62	66	59
5	57	39	36	30	37	55	71	58	54	60	64	61
6	49	37	31	16	40	55	71	58	62	64	66	63
7	45	39	31	17	41	58	68	62	62	64	59	65
8	44	37	33	25	65	55	66	66	57	66	68	59
9	48	34	33	29	48	53	68	64	58	64	66	59
10	48	37	38	32	42	53	67	61	56	60	62	59
11	48	50	38	32	42	52	64	61	59	60	59	60
12	52	40	41	32	41	52	64	63	54	56	59	69
13	52	40	41	31	41	52	64	63	52	52	59	60
14	55	35	41	31	38	49	65	60	49	30	57	64
15	60	34	41	33	38	49	59	60	57	60	60	57
16	60	37	41	50	38	46	56	62	53	62	60	57
17	58	34	41	43	38	46	56	60	58	54	60	57
18	58	34	36	42	38	52	60	59	56	89	58	64
19	55	34	41	38	36	49	56	66	58	80	62	62
20	51	37	36	38	38	57	56	59	61	89	63	69
21	49	39	33	36	38	54	51	60	61	80	61	62
22	53	39	36	36	41	52	54	55	63	80	54	62
23	52	39	36	36	38	56	56	55	66	89	56	69
24	57	43	36	36	59	56	56	55	61	89	56	69
25	62	39	36	36	78	56	54	55	57	101	54	54
26	59	42	34	36	67	56	56	53	61	99	51	54
27	62	42	35	36	67	58	59	53	56	57	54	49
28	59	41	34	36	59	58	56	59	51	52	44	48
29	56	41	34	36	.....	61	59	45	58	47	44	46
30	56	48	36	36	.....	65	51	49	53	57	59	43
31	63	.....	36	35	.....	75	.....	62	.....	49	57	.....
1913–14.												
1	53	31	30	35	184	200	107	187	124	102	79	65
2	58	29	30	32	158	189	104	186	136	97	73	65
3	56	26	27	32	129	189	104	186	136	97	73	63
4	58	22	30	30	113	177	103	174	136	97	73	63
5	61	22	27	32	96	157	120	174	136	97	73	63
6	61	22	27	30	90	157	120	164	136	95	73	63
7	61	22	27	30	85	157	139	164	134	95	73	62
8	59	22	27	30	79	149	120	154	134	92	73	62
9	61	22	27	30	79	149	120	154	132	92	73	62
10	59	18	27	27	79	148	119	146	120	92	71	62
11	59	24	27	30	73	148	118	146	112	92	69	61
12	59	21	27	27	68	147	126	138	112	91	69	61
13	54	105	29	27	68	140	125	138	110	91	69	64
14	49	36	29	27	66	131	125	138	110	91	69	64
15	56	29	26	250	66	130	124	138	110	84	69	64
16	54	31	26	404	66	130	118	136	110	84	70	64
17	56	29	26	130	66	129	109	136	110	84	70	64
18	59	30	27	104	96	128	110	136	109	84	70	64
19	57	86	27	236	435	128	112	134	109	84	69	64
20	59	60	27	192	1,370	127	115	134	109	81	69	63
21	55	41	27	94	2,240	126	116	134	109	81	69	63
22	58	36	27	84	665	126	132	126	109	81	69	63
23	55	31	35	74	429	125	119	124	104	81	69	54
24	50	32	30	68	258	119	119	124	105	81	71	57
25	52	30	30	176	108	118	115	122	105	81	71	62
26	44	30	35	1,060	108	117	111	116	101	81	72	66
27	44	30	32	830	213	117	108	116	101	81	72	77
28	39	30	30	392	213	120	104	116	101	81	72	71
29	41	27	27	281	.....	120	276	114	101	81	72	71
30	39	32	32	247	.....	116	221	126	101	78	70	66
31	41	.....	37	217	.....	108	.....	126	.....	78	70	.....

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Combined daily discharge, in second-feet, of Santa Ana River and canals near Mentone, Calif., for 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	67	48	43	47	279	172	204	273	283	185	115	89
2	78	48	47	47	202	172	228	335	313	185	115	89
3	78	48	43	47	202	172	228	273	313	185	115	89
4	57	46	47	66	202	163	253	273	283	185	115	89
5	57	46	47	47	202	168	253	273	255	185	115	89
6	57	46	43	47	202	168	227	273	255	185	107	88
7	57	46	43	45	202	138	204	273	255	185	107	88
8	62	46	43	47	202	132	204	273	255	185	107	83
9	55	48	43	47	225	129	204	273	255	185	107	82
10	55	59	43	45	951	144	204	303	255	185	104	82
11	55	59	44	45	936	144	227	312	255	185	104	82
12	55	52	47	45	571	144	254	339	255	185	104	82
13	62	52	43	45	571	144	254	379	229	185	104	82
14	62	52	43	45	582	144	256	314	229	166	104	82
15	62	48	43	47	216	144	230	344	229	157	104	82
16	62	46	43	46	216	144	230	312	229	157	101	82
17	62	48	76	45	216	180	230	344	229	149	99	82
18	62	46	70	45	172	180	230	344	229	149	99	82
19	57	46	61	47	172	180	256	344	229	149	99	78
20	50	48	56	45	172	180	256	344	206	149	94	78
21	51	46	56	49	166	180	276	344	206	142	90	72
22	47	48	60	59	166	181	256	344	206	142	90	72
23	58	48	59	49	166	225	256	344	206	135	90	71
24	58	45	54	47	166	228	254	282	206	149	90	71
25	58	45	49	78	172	254	254	282	206	150	90	77
26	58	44	49	59	172	228	254	282	206	143	90	82
27	58	45	54	54	172	204	245	283	206	136	90	84
28	58	47	45	78	166	204	245	283	185	124	90	84
29	58	47	45	406	.....	282	303	283	185	124	90	76
30	58	43	45	274	.....	254	273	283	185	124	90	70
31	57	.....	41	279	.....	228	.....	283	.....	124	89	.....
1915–16.												
1	70	66	66	60	.....	595	466	288	202	160	118	106
2	70	68	62	92	.....	595	470	282	202	158	82	104
3	70	73	62	90	.....	595	470	282	198	158	110	104
4	65	73	90	79	.....	595	471	282	194	158	110	102
5	65	73	67	79	.....	1,300	471	274	192	154	110	100
6	68	71	68	122	.....	1,000	446	294	192	152	110	100
7	68	77	64	86	.....	760	446	274	178	148	108	100
8	73	71	64	82	.....	700	426	274	176	148	106	100
9	73	66	64	304	.....	700	426	274	174	148	112	104
10	68	72	63	239	.....	700	451	274	176	142	114	104
11	79	66	63	91	700	700	451	274	178	140	116	104
12	79	66	63	98	700	700	457	274	194	142	110	104
13	73	66	63	81	700	700	426	274	188	138	72	104
14	79	66	64	78	700	640	435	274	184	152	110	108
15	73	66	46	123	700	640	429	274	184	148	112	108
16	73	66	58	111	700	640	407	274	182	144	114	106
17	73	66	58	950	700	640	407	230	182	144	114	112
18	73	66	64	.....	835	640	407	240	180	144	114	112
19	73	66	64	.....	835	595	407	274	180	132	114	112
20	73	66	64	.....	835	640	384	274	180	132	108	122
21	73	66	64	.....	700	1,090	384	241	180	130	108	112
22	73	66	64	.....	700	1,000	407	228	180	128	106	110
23	74	66	64	.....	835	1,090	384	222	180	128	106	104
24	74	66	64	.....	835	1,090	344	222	180	136	104	110
25	74	66	64	.....	835	1,000	305	222	178	132	104	112
26	74	66	60	.....	700	1,000	279	218	178	130	106	114
27	68	66	60	.....	595	910	279	218	176	124	108	114
28	66	62	60	.....	595	835	275	214	174	122	108	114
29	66	66	60	.....	595	738	282	214	170	122	108	114
30	66	66	60	.....	.....	500	282	200	170	122	106	114
31	66	.....	60	.....	.....	470	.....	200	.....	120	106	.....

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Combined daily discharge, in second-feet, of Santa Ana River and canals near Mentone, Calif., for 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	114	112	79	85	67	114	118	164	87	92	98	106
2	122	106	79	85	67	112	110	160	86	92	105	106
3	124	106	79	90	67	104	110	158	86	91	103	103
4	114	106	79	88	67	102	110	162	86	90	107	103
5	106	104	79	82	78	98	110	166	86	87	105	102
6	122	94	79	82	78	98	110	166	86	87	104	102
7	111	94	79	81	78	96	110	162	82	92	106	102
8	109	94	79	80	68	96	69	166	82	92	108	102
9	110	92	79	80	73	96	111	154	82	92	108	100
10	104	90	79	81	73	104	118	152	82	92	111	100
11	99	89	79	83	73	104	114	146	86	92	113	100
12	98	92	79	83	73	102	112	142	81	92	133	97
13	98	92	79	84	73	100	112	142	81	92	123	98
14	94	92	79	83	74	99	112	138	82	93	113	100
15	105	86	79	83	74	98	118	136	91	94	111	102
16	117	82	79	83	74	97	122	136	91	93	109	101
17	115	86	79	73	72	96	126	134	18	92	106	102
18	115	82	79	84	73	96	122	128	72	92	104	100
19	114	82	79	144	82	96	118	124	86	91	93	100
20	110	82	79	99	86	99	118	128	86	91	92	100
21	107	82	79	95	93	100	120	112	91	91	92	100
22	104	82	79	93	202	100	120	102	92	91	92	100
23	103	82	79	85	178	100	122	102	94	91	94	102
24	103	82	79	84	140	98	126	102	95	92	109	102
25	104	82	100	84	254	97	130	106	94	94	110	102
26	108	82	86	84	180	102	136	102	94	94	106	100
27	111	79	86	83	148	106	136	96	93	93	106	98
28	106	79	81	73	122	114	158	100	92	102	104	99
29	104	79	86	73	.....	122	166	99	92	98	104	99
30	109	79	86	90	.....	130	166	93	88	96	103	98
31	112	.....	86	72	.....	126	.....	92	.....	93	103	.....
1917–18.												
1	104	81	70	60	51	51	126	88	76	84	88	92
2	104	90	70	65	51	49	130	84	84	89	88	89
3	103	90	74	66	51	51	126	84	76	87	90	87
4	102	90	33	70	51	49	120	100	77	87	88	89
5	100	85	44	69	56	49	108	92	81	89	86	88
6	98	83	21	69	61	104	110	96	81	89	86	86
7	96	90	51	60	65	2,480	110	94	80	89	86	86
8	94	85	66	60	61	545	112	96	80	101	86	86
9	94	70	66	60	61	184	106	96	80	104	86	86
10	94	69	66	51	57	1,930	104	92	80	93	92	103
11	92	69	60	65	57	1,770	102	88	83	87	88	87
12	93	74	60	65	65	3,970	106	85	87	89	86	87
13	98	74	60	69	65	1,810	120	80	89	88	86	88
14	98	69	60	65	69	570	112	90	89	88	89	91
15	94	60	65	65	74	358	104	91	90	86	92	92
16	94	60	60	60	74	264	100	90	106	83	95	94
17	94	69	60	60	74	210	98	91	109	86	96	94
18	92	69	60	60	70	168	96	90	96	83	94	93
19	91	65	60	60	20	100	96	91	94	86	90	92
20	90	65	60	60	59	196	94	89	92	82	88	90
21	90	69	65	60	65	166	94	88	86	86	87	90
22	90	80	60	60	125	168	96	84	83	88	84	96
23	91	74	69	60	99	166	92	84	80	86	84	92
24	91	80	60	60	71	160	98	84	80	88	87	88
25	93	80	55	69	62	156	94	81	75	86	87	86
26	93	80	51	60	59	150	93	84	72	83	87	83
27	92	80	55	55	57	136	93	88	83	79	86	83
28	91	74	60	55	51	126	92	90	83	85	83	86
29	90	74	60	55	.....	126	92	90	83	85	83	86
30	90	74	60	51	.....	126	88	88	84	87	92	86
31	85	.....	55	51	.....	128	.....	81	.....	85	104	.....

NOTE.—See pp. 262–270 for tables of daily discharge of Southern California Edison Co's. canal near Mentone and pp. 273–278 for tables of Greenspot pipe line. Previous to September 7, 1911, discharge of Greenspot pipe line was not included in combined discharge tables.

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Monthly discharge of Santa Ana River and canals near Mentone, Calif., for 1896–1898 and 1902–1918.

[Drainage area, 182 square miles.[a]]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1896.						
July			77	0.42	0.48	4,753
August			71	.39	.45	4,353
September			69	.38	.42	4,124
1896–97.						
October			71	.39	.45	4,372
November			37	.20	.22	2,148
December			39	.21	.24	2,435
January	104	35	68	.37	.43	4,179
February	585	77	185	1.02	1.06	10,282
March	465	70	124	.68	.78	7,637
April	190	113	150	.82	.91	8,899
May	113	48	76	.42	.48	4,690
June	86	60	80	.44	.49	4,723
July	102	70	83	.46	.53	5,077
August	100	54	75	.41	.47	4,628
September	81	58	67	.37	.41	3,968
The year			87.9	.48	6.47	63,080
1897–98.						
October	270	45	54	.30	.35	3,347
November	59	40	45	.25	.28	2,678
December	38	29	33	.18	.21	2,040
January			49	.27	.31	2,987
February			48	.26	.27	2,688
March			40	.22	.25	2,448
April			39	.21	.23	2,333
May			61	.34	.34	3,727
June			48	.26	.29	2,840
July			43	.24	.28	2,625
August			43	.24	.28	2,658
September			38	.21	.23	2,223
The year			45.1	.25	3.32	32,600
1898.						
October			26	.14	.16	1,581
November			22	.12	.13	1,285
December			22	.12	.14	1,364
1902.						
January	45	20	24	.13	.15	1,476
February	240	20	38	.21	.22	2,110
March	485	41	79	.43	.50	4,858
April	71	43	51	.28	.31	3,035
May	45	31	36	.20	.23	2,214
June	47	23	33	.18	.20	1,964
July	32	23	26	.14	.16	1,599
August	30	22	25	.14	.16	1,537
September	29	22	24	.13	.15	1,428
The period						20,200
1902–3.						
October	55	30	39	.21	.24	2,398
November	43	19	24	.13	.15	1,428
December	27	19	22	.12	.14	1,353
January	277	19	33	.18	.21	2,029
February	105	36	48	.26	.27	2,666
March	2,451	38	148	.81	.93	9,100
April	4,908	106	352	1.93	2.15	20,945
May	113	79	92	.51	.59	5,657
June	79	47	64	.35	.39	3,808
July	57	44	51	.28	.32	3,136
August	59	50	55	.30	.35	3,382
September	64	45	52	.29	.32	3,094
The year	4,908	19	81.7	.449	6.06	59,600

[a] See footnote on page 261.

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Monthly discharge of Santa Ana River and canals near Mentone, Calif., for 1896–1898 and 1902–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1903–4.						
October	57	30	47	0.26	0.30	2,890
November	52	27	30	.16	.18	1,785
December	30	25	27	.15	.17	1,660
January	28	24	26	.14	.16	1,599
February	94	26	33	.18	.19	1,898
March	280	28	64	.35	.40	3,935
April	106	36	53	.29	.32	3,154
May	48	34	41	.23	.27	2,521
June	50	37	44	.24	.27	2,618
July	52	37	45	.25	.29	2,767
August	56	35	46	.25	.29	2,828
September	58	40	50	.27	.30	2,975
The year	280	24	42.2	.232	3.14	30,600
1904–5.						
October	56	22	48	.26	.30	2,951
November	22	17.7	20	.11	.12	1,190
December	23	18.4	20	.11	.13	1,230
January	108	22	36.6	.201	.23	2,251
February	234	26	97.6	.536	.56	5,420
March	321	48	130	.714	.82	7,993
April	120	63	90.5	.497	.55	5,385
May	256	91	172	.945	1.09	10,580
June	94	64	77.7	.427	.48	4,624
July	69	57	62.9	.346	.40	3,867
August	82	52	66.8	.367	.42	4,107
September	79	52	68.3	.375	.42	4,064
The year	321	17.7	74.2	.408	5.52	53,700
1905–6.						
October	67	42	49.2	.270	.31	3,025
November	250	30	47.5	.261	.29	2,827
December	107	31	38.4	.211	.24	2,362
January	181	34	46.8	.257	.30	2,880
February	121	33	63.1	.347	.36	3,500
March	2,440	51	530	2.91	3.36	32,600
April	495	186	274	1.50	1.67	16,300
May	536	163	245	1.35	1.56	15,100
June	329	135	172	.945	1.05	10,200
July	140	90	119	.654	.75	7,320
August	111	67	80.5	.442	.51	4,950
September	74	58	64.1	.352	.39	3,810
The year	2,140	30	144	.793	10.79	105,000
1906–7.						
October	74	66	71.4	.392	.45	4,390
November	69	54	60.3	.331	.37	3,590
December	859	56	111	.610	.70	6,820
January	851	86	239	1.31	1.51	14,700
February	776	128	292	1.60	1.67	16,200
March	1,960	184	681	3.74	4.31	41,900
April	776	265	552	3.03	3.38	32,800
May	352	186	236	1.30	1.50	14,500
June	186	142	171	.940	1.05	10,200
July	154	109	135	.742	.86	8,300
August	109	78	90.2	.496	.57	5,550
September	132	62	73.2	.402	.45	4,360
The year	1,960	54	226	1.24	16.82	163,000
1907–8.						
October	126	68	84.2	.463	.53	5,180
November	148	64	119	.654	.73	7,080
December	74	55	60.4	.332	.38	3,710
January	267	53	82.1	.451	.52	5,050
February	252	73	135	.742	.80	7,760
March	198	83	125	.687	.79	7,690
April	155	79	98.9	.543	.61	5,880
May	120	63	76.3	.419	.48	4,690
June	69	55	61.6	.338	.38	3,670
July	71	58	64.3	.353	.41	3,950
August	70	54	63.8	.351	.40	3,920
September	77	44	58.8	.323	.36	3,500
The year	267	44	85.8	.471	6.39	62,100

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Monthly discharge of Santa Ana River and canals near Mentone, Calif., for 1896–1898 and 1902–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1908–9.						
October	68	47	57.8	0.318	0.37	3,550
November	67	39	42.8	.235	.26	2,550
December	58	38	43.4	.238	.27	2,670
January	1,383	37	120	.659	.76	7,380
February	651	75	238	1.31	1.36	13,200
March	378	95	183	1.01	1.16	11,300
April	311	128	209	1.15	1.28	12,400
May	256	92	158	.868	1.00	9,720
June	157	76	97.3	.535	.60	5,790
July	78	62	69.0	.379	.44	4,240
August	76	58	64.2	.353	.41	3,950
September	80	54	61.8	.340	.38	3,680
The year	1,383	37	112	.616	8.29	80,400
1909–10.						
October	68	48	57.9	.318	.37	3,560
November	85	3	53.0	.291	.33	3,150
December	897	40	136	.747	.86	8,360
Jan. 23–31	219	129	173	.951	.32	3,090
February	179	88	112	.615	.64	6,220
March	131	90	103	.566	.65	6,330
April	142	79	105	.577	.64	6,250
May	90	75	84.9	.466	.54	5,220
June	79	57	69.4	.381	.43	4,130
July	85	57	65.0	.357	.41	4,000
August	95	53	62.5	.343	.40	3,840
September	77	55	65.0	.357	.40	3,870
The year	897	3	90.7	.498	5.99	58,000
1910–11.						
October	73	48	61.4	.337	.39	3,780
November	54	43	47.0	.258	.29	2,800
December	47	43	44.4	.244	.28	2,730
January	1,220	43	128	.703	.81	7,870
February	431	146	197	1.08	1.12	10,900
March	1,900	158	453	2.49	2.87	27,900
April	313	159	213	1.17	1.30	12,700
May	163	103	130	.714	.82	7,990
June	137	95	104	.571	.64	6,190
July	111	67	89	.489	.56	5,470
August	71	58	64.5	.354	.41	3,970
September	92	57	65.8	.362	.40	3,920
The year	1,900	43	133	.731	9.89	96,200
1911–12.						
October	79	51	60.6	.33	.38	3,730
November	61	47	50.5	.28	.31	3,000
December	51	39	46.3	.25	.29	2,850
January	49	42	44.6	.24	.28	2,740
February	44	38	40.7	.22	.24	2,340
March	351	39	93.6	.51	.59	5,760
April	150	68.4	101	.56	.62	6,010
May	96	75.9	86.5	.48	.55	5,320
June	73.2	54.2	63.1	.35	.39	3,750
July	68.4	47.2	60.7	.33	.38	3,730
August	66.2	53.2	60.2	.33	.38	3,700
September	64.7	50.4	59.2	.33	.37	3,520
The year	351	38	64.0	.35	4.78	46,400
1912–13.						
October	63	44	54.8	.30	.35	3,370
November	50	34	39.1	.21	.23	2,330
December	45	31	36.6	.20	.23	2,250
January	50	16	34.2	.19	.22	2,100
February	78	35	44.6	.25	.26	2,480
March	75	46	54.3	.30	.35	3,340
April	75	51	61.4	.34	.38	3,650
May	66	45	58.4	.32	.37	3,590
June	66	49	57.5	.32	.36	3,420
July	101	30	66.3	.36	.42	4,080
August	68	44	58.5	.32	.37	3,600
September	65	43	57.7	.32	.36	3,430
The year	101	16	52.0	.29	3.90	37,600

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Monthly discharge of Santa Ana River and canals near Mentone, Calif., for 1896–1898 and 1902–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1913–14.						
October	61	39	53.8	0.30	0.35	3,310
November	105	18	33.5	.18	.20	1,990
December	37	26	28.8	.16	.18	1,770
January	1,060	27	170	.93	1.07	10,500
February	2,240	66	275	1.51	1.57	15,300
March	200	108	139	.76	.88	8,550
April	276	103	125	.69	.77	7,440
May	187	114	142	.78	.90	8,730
June	136	101	115	.63	.70	6,840
July	102	78	87.3	.48	.55	5,370
August	79	69	71.1	.39	.45	4,370
September	77	56	63.8	.35	.39	3,800
The year	2,240	18	108	[a] .59	[a] 8.01	78,000
1914–15.						
October	78	47	59.1	.31	.36	3,630
November	59	43	47.9	.25	.28	2,850
December	76	41	49.2	.26	.30	3,030
January	406	45	76.5	.40	.46	4,700
February	951	166	287	1.52	1.58	15,900
March	282	129	181	.96	1.11	11,100
April	303	204	242	1.28	1.43	14,400
May	379	273	307	1.62	1.87	18,900
June	313	185	235	1.24	1.38	14,000
July	185	124	160	.85	.98	9,840
August	115	89	100	.53	.61	6,150
September	89	70	81.3	.43	.48	4,840
The year	951	41	151	[a] .80	[a] 10.84	109,000
1915–16.						
October	79	65	71.4	.378	.44	4,390
November	73	62	67.5	.357	.40	4,020
December	90	46	63.1	.334	.39	3,880
January 1–17	950	60	163	.862	.54	5,500
February 11–29	835	595	726	3.84	2.71	27,460
March	1,300	470	768	4.06	4.68	47,200
April	471	275	399	2.11	2.35	23,700
May	294	200	254	1.34	1.55	15,600
June	202	170	183	.968	1.08	10,900
July	160	120	140	.741	.85	8,610
August	118	72	108	.571	.66	6,640
September	122	100	108	.571	.64	6,430
1916–17.						
October	124	94	109	.577	.67	6,700
November	112	79	89.0	.471	.53	5,300
December	100	79	80.9	.428	.49	4,970
January	144	72	85.5	.452	.52	5,260
February	254	67	99.5	.526	.55	5,530
March	130	96	103	.545	.63	6,330
April	166	69	121	.640	.71	7,200
May	166	92	131	.693	.80	8,050
June	95	18	84.8	.449	.50	5,050
July	102	87	92.4	.489	.56	5,680
August	133	92	106	.561	.65	6,520
September	106	97	101	.534	.60	6,010
The year	254	18	100	.529	7.21	72,600
1917–18.						
October	104	85	94.2	.498	.57	5,790
November	90	60	75.7	.401	.45	4,500
December	74	21	58.6	.310	.36	3,600
January	70	51	61.1	.323	.37	3,760
February	125	20	63.6	.337	.35	3,530
March	3,970	49	536	2.84	3.27	33,000
April	130	88	104	.550	.61	6,190
May	100	81	88.7	4.69	.54	5,450
June	109	72	84.6	.448	.50	5,030
July	104	79	87.4	.462	.53	5,370
August	104	83	88.5	.468	.54	5,440
September	103	83	89.2	.472	.53	5,310
The year	3,970	20	120	.635	8.62	87,000

[a] Drainage area 189 square miles for new site, beginning Oct. 1, 1914.

NOTE.—For discharge January, 1899, to December, 1901, see tables of monthly discharge of Santa Ana River near Mentone. Discharge of Greenspot pipe line not included prior to September 7, 1911.

Google

SOUTHERN CALIFORNIA EDISON CO.'S CANAL[1] AND GREENSPOT PIPE LINE, NEAR MENTONE, CALIF.

LOCATION.—At Southern California Edison Co.'s power plant at mouth of canyon, 2¾ miles below intake on Santa Ana River, and about 3 miles northeast of Mentone, San Bernardino County.

RECORDS AVAILABLE.—1896 to September 30, 1918 (not complete).

GAGE.—Hook gage above weir at end of flume below tailrace, on right bank of Santa Ana River about 300 feet west of power plant.

DISCHARGE.—Determined from gage heights which give head on 10-foot rectangular weir. The flood of January, 1916, destroyed flume and weir. Since that time discharge has been computed from records showing kilowatt output of power plant.

EXTREMES OF DISCHARGE.—1896–1918: Maximum mean daily discharge recorded, 97 second-feet March 16, 1905; no flow during short periods in nearly every year.

DIVERSIONS.—Since 1903, Greenspot pipe line has diverted water from this canal for irrigation, but the discharge was not included in record for canal. September 7, 1911, the intake was changed to forebay of canal, and since this date a record of the diversion has been reported.

ACCURACY.—Discharge determined from power-plant record, computed on the assumption that 1 second-foot develops 18.9 kilowatts. Record excellent when weir was used; remainder of record good.

The intake of the canal is at Southern California Edison Co.'s power plant No. 2, 2¾ miles above the Mentone plant at the mouth of the canyon. All the water except that taken by the Greenspot pipe line is first used for development of power; after it leaves the Mentone power house it is conducted across Santa Ana River in a flume and discharged into a lined canal, from which it is distributed for irrigation. Before it enters the irrigation canal it passes through three power plants.

Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918.

Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.
1901.				1901.				1901.			
1	.....	.....	4.6	11	6.0	3.0	3.8	21	3.5	2.5	3.8
2	.....	.....	4.6	12	6.0	3.0	3.8	22	3.5	2.5	3.8
3	.....	.....	4.6	13	6.0	3.0	3.8	23	3.0	2.5	3.8
4	.....	.....	4.6	14	6.0	3.0	3.8	24	3.0	2.5	3.8
5	.....	.....	4.6	15	6.0	3.0	3.8	25	3.0	2.5	3.8
6	.....	3.0	4.0	16	5.0	3.0	3.8	26	3.0	2.5	3.8
7	.....	3.0	4.0	17	4.0	2.5	3.8	27	3.0	2.5	3.8
8	.....	3.0	4.0	18	4.0	2.5	3.8	28	3.0	2.5	3.8
9	.....	3.0	4.0	19	3.5	2.5	3.8	29	3.0	2.5	3.8
10	.....	3.0	3.8	20	3.5	2.5	3.8	30	3.0	4.6	3.8
								31	3.0	.....	3.8

Day.	Mar.	Apr.	Day.	Mar.	Apr.	Day.	Mar.	Apr.
1902.			1902.			1902.		
1	12	11	11	.....	15	21	13	13
2	.....	15	12	.....	15	22	14	13
3	.....	15	13	13	15	23	14	12
4	.....	15	14	15	15	24	.....	.....
5	12	15	15	15	15	25	.....	.....
6	11	15	16	13	15	26	.....	.....
7	.....	15	17	14	14	27	.....	.....
8	.....	15	18	14	14	28	.....	.....
9	.....	15	19	14	13	29	.....	.....
10	.....	15	20	14	13	30	.....	.....
						31	.....	.....

[1] Published in early reports as Santa Ana canal and Mentone Power Co.'s canal and later as Pacific Light & Power Corporation's canal.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1903.						1903.					
1	3	3	2	.....	1	16	9	.....	2	.....	.....
2	3	3	2	.....	1	17	9	.....	2	.....	.....
3	3	3	2	.....	1	18	9	.....	2	.....	.....
4	3	3	2	.....	1	19	9	2	2	.....	.....
5	4	3	2	.....	1	20	9	2	2	.....	.....
6	4	3	2	.....	1	21	9	2	2	.....	.....
7	4	3	2	.....	1	22	9	2	2	.....	.....
8	4	3	2	.....	1	23	5	2	2	.....	.....
9	4	3	2	.....	1	24	5	2	2	.....	.....
10	4	3	2	.....	.....	25	5	2	2	.....	.....
11	4	3	2	.....	.....	26	4	2	2	.....	.....
12	4	.....	2	.....	.....	27	4	2	2	.....	.....
13	10	.....	2	.....	.....	28	.....	2	2	.....	.....
14	9	.....	2	.....	.....	29	.....	.....	2	.....	.....
15	9	.....	2	.....	.....	30	.....	.....	2	.....	.....
						31	.....	.....	.....	.....	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904.												
1	.....	.....	.....	25.3	22.5	13.3	0.0	11.8	21.2	23.5	23.5	54
2	.....	.....	.....	23.5	22.5	14.0	24.4	11.8	22.5	23.5	27.0	51
3	.....	.....	.....	23.5	23.5	13.3	23.5	11.8	25.3	21.6	25.3	47
4	.....	.....	.....	23.5	24.4	11.8	22.5	9.6	25.3	21.6	19.8	56
5	.....	.....	.....	23.5	32.3	12.5	22.5	10.3	28.4	.0	19.8	59
6	.....	.....	.....	21.6	27.5	12.5	22.5	9.0	27.5	.0	29.4	58
7	.....	.....	.....	23.5	25.6	12.9	22.5	9.0	39.5	.0	29.4	50
8	.....	.....	.....	24.4	25.6	10.3	24.4	10.3	28.4	.0	23.5	56
9	.....	.....	.....	24.4	25.3	10.3	21.6	10.3	27.5	.0	29.4	56
10	.....	.....	.....	24.4	27.5	10.3	19.8	10.3	27.5	10.3	.0	56
11	.....	.....	.....	24.4	27.5	18.1	19.8	7.0	22.5	23.5	29.4	54
12	.....	.....	.....	25.3	27.5	18.1	19.8	21.6	21.6	25.3	27.0	54
13	.....	.....	.....	24.4	25.6	13.3	14.8	21.6	21.6	25.3	24.0	54
14	.....	.....	.....	23.5	25.6	13.3	21.6	19.8	21.6	25.3	19.8	51
15	.....	.....	.....	23.5	25.6	11.8	14.8	19.0	23.5	25.3	40	51
16	.....	.....	.....	24.4	26.6	11.8	14.8	20.1	25.3	25.3	44	56
17	.....	.....	.....	24.4	30.4	13.3	14.0	21.6	23.5	25.3	44	56
18	.....	.....	.....	24.4	29.4	15.2	.0	23.5	23.5	25.3	44	59
19	.....	.....	.....	24.4	28.9	14.8	.0	23.5	23.5	23.5	54	61
20	.....	.....	.....	25.3	32.3	33.3	.0	25.3	23.5	23.5	49	64
21	.....	.....	.....	23.9	27.5	18.1	32.3	21.6	23.5	23.5	51	64
22	.....	.....	.....	25.6	25.6	19.8	32.3	22.5	23.5	23.5	54	58
23	.....	.....	.....	24.4	25.6	.0	19.8	20.1	23.5	23.5	49	66
24	.....	.....	.....	25.3	25.6	.0	17.3	22.5	21.6	21.6	47	56
25	.....	.....	.....	24.4	25.6	.0	17.3	22.5	23.5	21.6	47	48
26	.....	.....	.....	25.6	25.6	.0	16.4	25.3	23.5	21.6	49.0	49
27	.....	.....	.....	23.5	25.3	.0	11.8	22.5	23.5	21.6	52	49
28	.....	.....	.....	23.5	.0	.0	14.0	21.6	23.5	23.5	51	47
29	.....	.....	.....	23.5	.0	18.1	10.3	23.5	21.6	23.5	51	42
30	.....	.....	.....	23.5	.....	.0	10.3	22.5	23.5	25.3	44	44
31	.....	.....	.....	23.5	.....	18.1	.....	22.5	.....	25.3	44	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.												
1	59	19.8	18.1	22	25	60	57	71	0	63	53	66
2	58	19.8	18.1	22	64	57	0	66	0	61	53	63
3	59	22.0	18.1	21	64	60	0	66	0	61	51	63
4	59	19.8	18.1	21	0	60	54	56	0	61	61	63
5	49	19.8	18.1	21	0	60	63	58	0	61	61	66
6	54	19.0	18.1	22	22	57	63	73	0	61	61	66
7	59	19.0	18.1	21	42	57	63	51	0	58	63	66
8	49	18.1	18.1	20	37	54	72	56	0	58	63	61
9	51	18.1	18.1	0	37	51	78	66	0	56	63	61
10	44	19.0	18.1	61	35	48	78	76	0	56	63	63
11	37	18.1	18.1	54	43	48	72	76	0	58	63	73
12	49	19.0	18.1	41	26	51	66	76	66	61	63	76
13	47	18.1	18.1	41	28	0	66	76	43	63	66	76
14	38	19.0	18.1	31	29	0	63	0	71	66	68	78
15	37	18.1	18.1	31	35	0	57	0	71	66	68	78
16	38	18.1	18.1	27	29	97	43	71	71	63	71	78
17	38	18.1	18.1	29	32	78	0	71	68	63	71	78
18	51	18.1	18.1	33	42	0	0	71	68	63	81	78
19	47	18.1	18.1	25	70	0	0	36	68	61	81	73
20	47	18.1	17.3	27	70	0	71	36	68	61	56	68
21	51	18.1	18.1	66	70	0	66	32	68	61	56	68
22	56	18.1	17.3	61	74	78	66	29	68	61	56	61
23	51	18.1	18.1	49	74	66	66	29	68	61	56	68
24	51	18.1	17.3	40	66	78	66	29	68	61	73	68
25	47	18.1	17.3	31	66	78	71	0	68	61	73	51
26	49	18.1	17.3	29	58	60	71	0	68	61	73	56
27	45	18.1	17.3	27	51	85	66	0	68	61	76	56
28	45	18.1	16.0	25	58	85	66	0	63	61	76	66
29	40	18.1	19.0	25	.....	78	71	0	63	61	76	66
30	24	18.1	17.3	25	.....	42	76	0	63	56	73	66
31	19.8	.....	19.0	25	.....	57	.....	0	.....	56	73	.....
1905–6.												
1	51	46	34	34	32	51	0	70	71	71	72	63
2	51	32	32	33	32	48	56	71	66	66	72	58
3	56	32	34	34	32	48	55	71	70	71	72	58
4	56	32	32	34	32	43	57	71	71	71	72	63
5	51	32	32	34	32	56	56	71	70	71	72	63
6	46	36	32	34	35	52	52	71	70	71	72	63
7	46	41	32	34	35	51	65	71	70	71	71	66
8	41	46	32	34	35	50	70	70	70	71	68	64
9	56	41	32	34	44	50	70	72	70	71	70	63
10	46	29	30	34	41	50	68	71	70	71	71	62
11	46	29	32	33	42	46	73	66	70	71	71	62
12	61	30	32	34	52	43	74	71	70	71	71	62
13	66	32	29	35	59	40	74	66	71	71	71	59
14	56	30	29	45	55	27	66	63	71	71	72	60
15	61	30	32	44	63	43	66	66	71	71	72	64
16	56	29	30	44	62	49	66	66	71	71	72	63
17	51	29	30	37	64	0	68	66	70	71	45	58
18	46	29	29	37	51	11	68	68	70	71	42	58
19	43	29	29	59	49	35	71	70	71	71	72	56
20	41	29	29	30	48	44	72	70	71	71	72	56
21	41	34	32	48	48	43	72	66	70	71	72	57
22	46	32	25	50	60	58	71	71	72	71	72	54
23	41	30	25	37	58	55	71	71	71	71	72	52
24	41	29	25	37	56	71	71	71	71	71	72	52
25	46	30	25	41	56	35	70	66	71	72	72	52
26	46	30	25	38	53	34	71	66	66	72	70	52
27	41	41	29	35	51	25	71	64	64	72	70	59
28	41	50	28	35	49	55	71	0	71	72	66	62
29	41	41	30	33	.....	34	71	66	71	72	66	63
30	41	32	29	33	.....	21	71	66	71	72	65	64
31	41	.....	27	33	.....	27	.....	64	.....	72	66	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	64	67	62	76	76	76	76	76	70	69	69	69
2	64	60	61	76	76	76	76	76	70	69	69	69
3	64	60	70	76	76	76	76	76	70	69	69	69
4	63	62	71	76	76	76	76	76	70	69	69	69
5	63	64	71	76	76	76	76	74	70	69	69	69
6	63	66	72	76	76	76	76	74	70	69	69	69
7	61	66	67	76	76	76	76	74	70	69	69	69
8	61	56	60	76	76	76	76	74	70	69	69	65
9	61	60	60	76	76	76	76	74	70	69	69	65
10	61	60	68	76	76	76	76	74	70	69	69	65
11	61	60	61	76	76	76	76	74	70	69	69	60
12	61	60	59	76	76	76	76	74	70	69	69	58
13	61	58	74	76	76	76	76	74	70	69	69	62
14	61	54	72	76	76	76	76	74	70	69	69	62
15	61	57	72	76	76	76	76	74	70	69	69	62
16	61	54	65	76	76	76	76	74	70	69	69	62
17	61	54	68	76	76	76	76	74	70	69	69	64
18	64	56	65	76	76	76	76	74	70	69	69	66
19	63	56	65	.....	76	76	76	0	70	69	69	66
20	63	54	59	76	76	77	76	0	70	69	69	0
21	67	57	59	76	76	58	76	0	70	69	69	66
22	67	53	59	76	76	56	76	68	70	69	69	64
23	67	53	56	76	76	66	76	70	70	69	69	66
24	67	53	61	76	76	68	76	70	70	69	69	65
25	67	52	59	76	76	72	76	70	70	69	69	68
26	67	52	76	76	76	72	76	70	70	69	69	64
27	66	59	74	76	76	74	76	70	70	69	69	66
28	64	56	74	76	76	66	76	70	70	69	69	64
29	68	57	74	76	.....	77	73	70	70	69	69	68
30	67	62	73	76	.....	77	76	70	70	69	69	64
31	67	.....	74	76	.....	76	.....	70	.....	69	69	.....
1907–8.												
1	64	76	60	55	64	78	77	77	67	60	60	59
2	64	76	60	55	0	78	77	77	62	57	61	60
3	63	76	60	55	0	78	77	77	62	57	56	60
4	68	76	59	55	0	78	77	77	62	56	62	60
5	77	76	57	53	76	78	77	77	62	57	62	58
6	73	76	59	53	78	76	77	77	60	57	63	59
7	73	76	67	53	78	78	77	77	60	58	66	59
8	69	76	62	53	78	78	77	77	58	61	52	59
9	64	76	59	53	78	77	77	76	57	63	66	59
10	66	76	60	53	76	77	74	77	57	63	62	59
11	64	76	72	53	76	76	74	74	62	66	66	59
12	64	76	62	53	78	74	77	77	65	68	60	59
13	64	76	61	55	78	76	77	76	62	68	68	59
14	64	76	61	63	76	77	74	73	62	64	68	59
15	67	76	60	63	78	77	77	71	58	66	68	59
16	72	76	60	61	78	77	77	73	57	64	64	59
17	72	76	60	61	78	77	77	72	56	64	62	59
18	73	76	59	61	78	0	77	66	56	64	59	60
19	71	76	59	61	78	0	77	66	53	59	63	59
20	71	76	59	55	78	0	74	64	56	59	63	58
21	64	76	56	55	78	0	77	66	56	56	58	58
22	70	76	56	57	78	0	77	64	56	58	59	56
23	74	76	55	57	78	0	77	61	56	61	62	56
24	76	76	54	70	78	0	77	63	56	63	62	75
25	76	70	55	72	78	0	77	61	57	67	61	55
26	76	70	55	70	78	74	77	63	60	63	61	49
27	76	65	54	76	78	74	77	64	64	61	61	44
28	76	64	55	0	78	77	77	62	64	64	61	43
29	76	60	55	0	78	77	77	61	64	69	60	42
30	76	64	55	0	.....	77	77	67	62	69	60	44
31	76	.....	55	0	.....	77	.....	71	.....	68	60	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	58	65	40	40	76	76	76	76	73	74	73	63
2	59	48	38	38	76	76	76	76	73	72	60	56
3	60	45	56	38	74	76	76	76	73	73	56	53
4	60	41	56	38	76	76	76	74	73	70	55	52
5	59	40	50	37	76	76	76	73	73	70	55	54
6	45	40	47	39	76	76	76	73	0	70	60	53
7	45	40	41	37	76	76	76	73	0	70	62	56
8	53	40	43	37	56	76	76	73	0	73	63	55
9	48	39	43	35	76	76	76	73	60	64	61	53
10	66	39	43	63	76	76	76	73	60	70	61	55
11	61	40	41	49	76	76	76	73	65	64	55	63
12	59	40	41	48	76	76	76	73	65	64	55	63
13	62	37	41	66	0	76	76	73	65	64	61	59
14	66	39	40	68	0	76	76	73	65	63	60	60
15	66	38	40	64	0	76	76	73	65	63	61	58
16	63	40	40	60	76	76	76	73	65	59	60	59
17	62	38	40	58	76	76	76	73	78	59	66	54
18	64	40	37	49	76	76	76	73	76	62	68	59
19	54	38	36	48	76	76	76	73	78	62	63	63
20	46	37	36	46	76	76	76	73	78	62	62	65
21	46	37	40	77	76	76	76	73	76	60	61	59
22	52	38	41	48	76	76	76	73	81	61	60	59
23	45	38	41	76	76	76	76	73	80	61	61	58
24	52	49	41	76	76	76	76	73	80	75	68	62
25	48	39	40	76	76	76	76	73	80	71	67	57
26	48	39	41	76	76	76	76	73	78	67	65	63
27	50	40	39	76	76	76	76	73	78	68	67	57
28	53	41	38	76	76	76	76	73	75	67	59	69
29	57	38	38	76	.....	76	76	73	74	64	57	65
30	62	41	37	76	.....	76	76	73	74	68	57	63
31	61	.....	38	76	.....	76	.....	73	.....	73	64	.....
1909–10.												
1	62	56	50	0	74	64	74	78	73	57	55	58
2	61	55	51	0	72	66	66	78	72	58	57	58
3	65	52	54	0	72	72	64	78	72	57	58	59
4	59	52	41	0	73	74	72	78	72	56	51	54
5	53	50	44	0	73	76	71	78	55	56	55	51
6	54	50	50	0	68	72	72	79	74	63	56	55
7	47	48	50	0	76	72	78	76	72	59	57	55
8	47	46	51	0	73	72	79	66	72	59	59	60
9	59	49	72	39	76	72	78	78	71	59	59	56
10	57	56	66	45	76	68	79	76	72	56	62	60
11	56	53	76	57	74	68	79	76	68	55	58	58
12	59	47	76	52	63	68	74	76	63	62	55	60
13	60	49	74	58	68	0	78	76	71	56	56	58
14	58	57	73	54	73	0	78	76	71	64	59	58
15	59	58	73	58	68	73	79	73	73	66	55	60
16	60	59	71	49	68	77	78	76	73	0	56	62
17	58	53	65	56	68	79	78	76	71	0	58	60
18	56	53	59	62	68	78	77	77	66	0	57	52
19	56	51	38	55	73	77	77	78	64	0	68	52
20	55	51	65	55	64	78	77	77	65	0	66	59
21	57	.8	71	57	73	78	77	76	66	0	68	59
22	49	.8	63	57	72	79	77	76	60	0	66	55
23	45	51	68	64	66	79	73	76	64	43	64	62
24	51	49	78	66	66	74	73	76	60	54	62	64
25	54	46	78	65	66	65	73	74	60	55	60	58
26	54	57	77	62	64	71	78	78	57	54	59	59
27	54	63	79	62	62	70	73	73	59	54	63	60
28	55	46	74	78	64	72	78	74	59	66	62	60
29	52	5.3	70	78	.....	68	79	74	59	68	63	60
30	54	58	70	79	.....	71	78	73	60	63	60	70
31	51	.....	70	79	.....	70	.....	73	.....	63	62	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	68	52	43	41	68	72	73	70	74	77	64	60
2	59	46	42	42	72	72	73	71	74	76	70	65
3	57	45	44	40	71	72	73	72	74	76	66	65
4	58	48	42	40	71	72	73	72	74	76	65	57
5	57	44	44	41	71	73	72	74	72	74	65	57
6	51	45	43	41	71	73	73	74	72	76	65	57
7	55	44	41	41	71	72	73	74	72	74	64	58
8	58	42	41	40	71	72	71	74	73	74	63	59
9	57	43	41	40	72	71	72	74	72	76	62	59
10	58	41	42	73	72	60	73	74	72	76	60	59
11	62	42	43	68	73	73	73	74	0	76	65	63
12	58	41	41	68	72	72	73	74	78	76	66	65
13	58	42	42	58	72	72	72	74	76	76	66	66
14	56	48	41	55	73	73	73	74	76	73	66	66
15	58	52	41	72	72	72	71	74	77	74	66	70
16	54	48	41	71	72	73	70	74	77	74	66	68
17	54	45	41	58	72	72	71	76	77	76	65	68
18	57	45	44	71	72	73	72	74	74	74	65	63
19	51	44	44	64	73	73	71	74	77	76	58	60
20	46	44	45	62	73	73	72	73	77	76	59	55
21	59	43	43	59	72	72	72	74	77	0	59	58
22	64	45	42	57	72	72	71	74	76	0	58	57
23	54	44	44	55	73	72	72	74	76	0	57	57
24	54	44	43	62	72	73	71	74	77	0	59	57
25	58	42	41	73	72	73	70	74	77	0	62	56
26	63	51	43	0	72	73	71	74	77	0	66	55
27	65	48	43	71	72	73	71	73	76	44	66	60
28	59	48	42	70	72	73	71	72	76	66	66	63
29	59	43	42	58	.....	73	71	73	77	72	66	66
30	58	42	43	70	.....	73	71	74	77	66	62	65
31	56	.....	41	72	.....	73	.....	74	.....	70	60	.....
1911–12.												
1	70	51	38	43	38	34	66	78	65	58	51	51
2	56	49	41	45	37	39	71	81	65	49	49	49
3	59	49	33	45	37	39	71	78	65	52	49	49
4	58	54	44	45	34	50	73	78	63	52	50	45
5	56	54	41	45	37	45	71	78	60	49	56	49
6	54	50	43	45	37	66	73	76	60	45	58	49
7	54	42	46	45	37	71	71	73	60	44	58	49
8	50	42	44	43	37	71	73	76	58	52	58	49
9	50	43	44	41	34	65	78	76	56	56	56	49
10	50	43	44	39	34	71	77	76	56	56	54	54
11	45	54	39	39	34	71	78	76	54	55	56	56
12	57	45	44	40	34	66	77	76	58	59	58	58
13	58	44	43	40	37	71	76	76	50	58	56	58
14	59	44	41	38	34	71	79	76	56	60	60	58
15	56	43	42	38	34	73	79	76	54	59	62	58
16	59	43	41	38	34	71	81	71	54	58	62	54
17	58	49	41	41	38	0	79	76	49	62	56	51
18	65	49	43	38	38	70	78	76	49	55	54	54
19	59	49	43	38	37	73	78	76	49	56	49	54
20	63	50	41	40	37	63	78	76	56	50	54	54
21	60	49	45	38	37	71	81	76	56	55	54	54
22	59	46	45	38	34	71	79	71	56	54	54	54
23	58	40	45	39	37	66	79	66	58	56	54	56
24	54	42	45	38	37	63	79	71	60	56	56	58
25	60	40	45	38	34	65	79	71	58	60	56	54
26	63	40	43	38	32	65	79	71	60	60	49	54
27	71	40	43	38	34	66	79	68	63	60	49	56
28	57	40	43	39	34	66	78	68	63	58	54	56
29	56	40	48	38	34	66	73	71	60	60	49	58
30	54	40	43	38	.....	71	78	71	68	60	51	56
31	51	.....	43	38	.....	73	.....	71	.....	58	51	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	51	41	41	34	34	42	68	46	51	56	51	54
2	54	29	32	34	32	44	71	54	49	58	54	51
3	54	39	29	34	32	45	65	54	51	58	56	51
4	45	34	32	34	32	49	60	54	54	58	58	54
5	49	34	32	27	34	51	63	54	49	56	56	56
6	41	32	27	13	37	51	63	54	54	58	58	58
7	37	34	27	15	38	54	60	58	54	58	51	60
8	41	32	29	23	58	51	58	60	49	60	60	54
9	45	29	29	27	44	49	60	58	51	58	58	56
10	45	32	34	27	38	49	63	54	51	54	58	56
11	45	44	34	29	38	44	60	54	54	58	56	58
12	49	34	37	29	37	44	60	56	49	54	56	58
13	49	34	37	27	37	44	60	56	49	49	56	58
14	51	29	37	27	34	41	60	58	46	27	54	58
15	56	29	37	20	34	41	54	58	54	54	54	51
16	56	32	37	45	34	38	51	60	46	56	54	51
17	54	29	37	38	34	38	51	58	51	48	54	51
18	54	29	32	37	34	44	55	51	49	0	54	58
19	51	29	37	34	32	41	51	58	51	0	58	58
20	43	32	32	34	34	49	51	51	54	0	58	56
21	41	34	29	32	34	46	46	54	56	0	56	58
22	45	34	32	32	37	44	49	49	58	0	49	58
23	44	34	32	32	34	48	51	51	63	0	51	58
24	49	38	32	32	55	46	51	51	58	0	51	58
25	54	34	32	32	71	46	49	51	54	a 12	49	49
26	51	37	32	32	60	46	51	49	54	32	46	49
27	54	37	32	32	60	48	54	49	49	51	49	44
28	51	37	32	32	54	48	51	51	44	46	41	46
29	51	37	32	32	.....	51	54	37	51	41	41	44
30	51	44	34	32	.....	55	46	41	46	51	56	41
31	56	.....	34	34	.....	65	.....	54	.....	44	54	.....
1913–14.												
1	51	29	27	32	72	77	74	72	72	76	72	59
2	56	27	27	29	72	77	74	74	72	76	66	59
3	54	24	24	29	74	77	74	74	73	76	66	57
4	56	19	27	27	74	77	74	74	73	76	66	57
5	56	19	24	29	72	77	74	74	73	76	66	57
6	56	19	24	27	70	77	74	74	73	74	66	57
7	56	19	24	27	70	77	74	74	73	74	66	57
8	54	19	24	27	64	77	74	74	73	74	66	57
9	56	19	24	27	64	77	74	74	78	74	66	57
10	54	16	24	24	64	74	74	74	78	74	64	57
11	54	22	24	27	60	74	74	74	78	74	62	57
12	54	19	24	24	58	74	74	74	78	73	62	57
13	51	73	27	24	58	74	74	74	78	73	62	57
14	46	34	27	24	56	74	74	74	78	73	62	57
15	51	27	24	77	58	74	74	74	78	73	62	57
16	49	29	24	77	58	74	74	72	78	73	62	57
17	51	27	24	77	58	74	72	72	78	73	62	57
18	54	27	24	70	60	74	72	72	78	73	62	57
19	54	71	24	77	74	74	72	72	78	73	62	57
20	58	46	24	72	41	74	72	72	78	71	62	57
21	54	34	24	77	51	74	72	72	78	71	62	57
22	54	32	24	70	37	74	74	72	78	71	62	57
23	51	27	32	64	37	74	74	72	76	71	62	50
24	46	29	27	58	51	74	73	72	76	71	64	50
25	49	27	27	77	77	74	73	72	76	71	64	55
26	41	27	32	41	77	74	73	72	76	71	64	59
27	41	27	29	70	77	74	73	72	76	71	64	70
28	37	27	27	77	77	74	73	72	76	71	64	64
29	39	24	24	77	.....	74	73	72	76	71	64	64
30	37	29	29	77	.....	74	72	72	76	71	64	59
31	39	.....	34	77	.....	74	.....	72	.....	71	64	.....

a Estimated.

NOTE.—Discharge May 12 and 13 interpolated.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	59	41	37	43	79	70	79	70	79	79	79	79
2	70	41	41	43	79	70	79	70	79	79	79	79
3	70	41	37	43	79	70	79	70	79	79	79	79
4	50	39	41	62	79	59	79	70	79	79	79	79
5	50	39	41	43	79	64	79	70	79	79	79	79
6	50	39	37	43	79	64	79	70	79	79	79	79
7	50	39	37	41	79	70	79	70	79	79	79	79
8	55	39	37	43	79	64	79	70	79	79	79	74
9	50	41	37	43	79	64	79	70	79	79	79	74
10	50	52	37	41	79	79	79	70	79	79	79	74
11	50	52	37	41	64	79	79	79	79	79	79	74
12	50	45	41	41	59	79	79	74	79	79	79	74
13	55	45	37	41	59	79	79	79	79	79	79	74
14	55	45	37	41	70	79	79	79	79	79	79	74
15	55	41	37	43	70	79	79	79	79	79	79	74
16	55	39	37	0	70	79	79	79	79	79	79	74
17	55	41	70	41	70	79	79	79	79	79	79	74
18	55	39	64	41	70	79	79	79	79	79	79	74
19	50	39	55	43	70	79	79	79	79	79	79	70
20	45	41	50	41	70	79	79	79	79	79	79	70
21	45	39	50	45	64	79	41	79	79	79	79	64
22	41	41	55	55	64	79	79	79	79	79	79	64
23	50	41	55	45	64	79	79	79	79	79	79	64
24	50	37	50	43	64	79	79	79	79	79	79	64
25	50	37	45	74	70	79	79	79	79	79	79	70
26	50	39	45	55	70	79	79	79	79	79	79	74
27	50	39	50	50	70	79	70	70	79	79	79	74
28	50	41	41	74	64	79	70	79	79	79	79	74
29	50	41	41	74	.....	79	70	79	79	79	79	70
30	50	37	41	74	.....	79	70	79	79	79	79	64
31	50	.....	37	79	.....	79	.....	79	.....	79	79	.....
1915–16.												
1	64	59	59	55	.....	.....	55	79	85	85	85	79
2	64	59	55	74	.....	.....	59	74	85	85	50	79
3	64	64	55	74	.....	.....	59	74	85	85	79	79
4	59	64	59	74	.....	.....	59	74	85	85	79	79
5	59	64	59	74	.....	.....	59	79	85	85	79	79
6	59	64	59	79	.....	.....	59	85	85	85	79	79
7	59	70	59	79	.....	.....	59	79	85	85	79	79
8	64	64	59	74	.....	.....	64	79	85	85	79	79
9	64	59	59	74	.....	.....	64	79	85	85	85	79
10	59	64	59	74	.....	.....	64	79	85	85	85	79
11	70	59	59	74	.....	.....	64	79	85	85	85	79
12	70	59	59	74	.....	.....	70	79	85	85	79	79
13	64	59	59	74	.....	.....	64	79	85	85	45	79
14	70	59	59	74	.....	.....	70	79	85	85	85	79
15	64	59	41	74	.....	.....	64	79	85	85	85	79
16	64	59	41	74	.....	.....	64	79	85	85	85	79
17	64	59	41	13.3	.....	.....	64	79	85	85	85	85
18	64	59	59	.0	.....	.....	64	79	85	85	85	85
19	64	59	59	.....	.....	.....	64	79	85	85	85	85
20	64	59	59	.....	.....	.....	64	79	85	85	79	85
21	64	59	59	.....	.....	.....	64	0	85	85	79	85
22	64	59	59	.....	.....	.....	64	79	85	85	79	85
23	64	59	59	.....	.....	.....	64	79	85	85	79	79
24	64	59	59	.....	.....	.....	64	79	85	85	79	85
25	64	59	59	.....	.....	.....	59	79	85	85	79	85
26	64	59	55	.....	.....	.....	74	79	85	85	79	85
27	59	59	55	.....	.....	.....	74	79	85	85	79	85
28	59	55	55	.....	.....	0	70	79	85	85	79	85
29	59	59	55	.....	.....	37	74	79	85	85	79	85
30	59	59	55	.....	.....	59	74	79	85	85	79	85
31	59	.....	55	.....	.....	59	.....	79	.....	85	79	.....

NOTE.—No water in canal Jan. 18 to Mar. 28; flume damaged by flood.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Mentone, Calif., for 1901–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	85	85	70	79	59	85	85	85	74	79	85	85
2	85	79	70	79	59	85	85	85	74	79	85	85
3	85	79	70	79	59	85	85	85	74	79	85	85
4	79	79	70	79	59	85	85	85	74	74	85	85
5	79	79	70	74	70	85	85	85	74	74	85	85
6	85	79	70	74	70	85	85	85	74	74	85	85
7	85	79	70	74	70	85	85	85	70	79	85	85
8	85	79	70	74	59	85	0	85	70	79	85	85
9	85	79	70	74	64	85	79	85	70	79	85	85
10	85	79	70	74	64	85	79	85	70	79	85	85
11	85	79	70	74	64	85	79	85	74	79	85	85
12	85	79	70	74	64	85	79	85	70	79	85	85
13	85	79	70	74	64	85	79	85	70	79	85	85
14	85	79	70	74	64	85	79	85	70	79	85	85
15	85	74	70	74	64	85	79	85	79	79	85	85
16	85	70	70	74	64	85	79	85	79	79	85	85
17	85	74	70	64	59	85	85	85	0	79	85	85
18	85	70	70	74	59	85	85	85	59	79	85	85
19	85	70	70	79	70	85	85	85	74	79	79	85
20	85	70	70	79	74	85	85	85	74	79	79	85
21	85	70	70	79	79	85	85	79	79	79	79	85
22	85	70	70	79	85	85	85	79	79	79	79	85
23	85	70	70	74	85	85	85	79	79	79	79	85
24	85	70	70	74	85	85	85	79	79	79	85	85
25	85	70	74	74	85	85	85	79	79	79	85	85
26	85	70	70	74	85	85	85	79	79	79	85	85
27	85	70	74	74	85	85	85	79	79	79	85	85
28	85	70	74	64	85	85	85	85	79	79	85	85
29	85	70	79	64	.....	85	85	85	79	79	85	85
30	85	70	79	79	.....	85	85	79	74	79	85	85
31	85	.....	79	64	.....	85	.....	79	.....	79	85	.....
1917–18.												
1	85	70	59	50	45	45	85	72	64	72	77	77
2	85	79	59	55	45	43	85	69	64	77	77	77
3	85	79	59	55	45	45	85	69	64	75	77	75
4	85	79	20	59	45	43	85	86	65	75	77	77
5	85	74	0	59	50	43	83	77	69	77	75	77
6	85	70	0	59	55	85	85	80	69	77	75	75
7	79	79	42	50	59	85	85	77	69	77	75	75
8	79	74	55	50	55	0	85	77	69	77	75	75
9	79	59	55	50	55	61	80	77	69	77	75	75
10	79	59	55	41	50	69	80	77	69	77	77	72
11	79	59	50	55	50	0	80	75	72	72	75	72
12	79	64	50	55	55	0	83	72	75	75	75	75
13	79	64	50	59	55	0	83	67	77	75	75	75
14	79	59	50	55	59	75	80	75	77	77	77	77
15	79	50	55	55	64	77	80	75	77	75	77	77
16	79	50	50	50	64	77	80	75	80	72	77	77
17	79	59	50	50	64	85	80	75	80	75	77	77
18	79	59	50	50	56	85	80	75	80	72	77	77
19	79	55	50	50	0	85	80	75	80	75	77	77
20	79	55	50	50	53	85	77	75	80	72	75	77
21	79	59	55	50	59	83	77	75	75	75	75	77
22	79	70	50	50	83	85	77	72	72	77	72	89
23	79	64	59	50	83	85	77	72	69	75	72	77
24	79	70	50	50	64	88	80	72	69	77	75	75
25	79	70	45	59	56	85	77	69	64	75	75	75
26	79	70	41	50	53	85	75	72	61	72	75	72
27	79	70	45	45	51	72	75	75	72	69	75	72
28	79	64	50	45	45	75	75	75	72	75	72	75
29	79	64	50	45	.....	85	75	75	72	75	72	75
30	79	64	50	45	.....	85	72	75	72	77	77	75
31	74	.....	45	45	.....	85	.....	69	.....	75	89	.....

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Monthly discharge of Southern California Edison Co.'s canal near Mentone, Calif., for 1896–1898, 1901, and 1904–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1896.				
July			14	861
August			14	861
September			14	833
1896–97.				
October			16	984
November			3.5	2,083
December			4.2	2,582
January	8.5	3.2	5.6	344
February	6	.0	4.0	222
March	6	.5	5.2	320
April	12	.0	3.8	226
May	20	.0	15.0	922
June	19	.0	16.6	988
July	18.5	10.6	15.6	960
August	20	17.4	18.3	1,125
September			20	1,190
The year	20	.0	10.6	11,900
1897–98.				
October			12.4	762
November			7	417
December			7	430
January			9	553
February			8	444
March			8	492
April			8	476
May			6	369
June			4	238
July			2	123
August			2	123
September			2	119
The year			6.28	4,550
1898.				
October			0	0
November			0	0
December			0	0
1901.				
March	6	0	2.71	167
April	4.62	0	2.34	139
May	4.62	3.8	3.96	243
1904.				
January	25.6	21.6	24.1	1,480
February	32.3	.0	24.7	1,420
March	33.3	.0	11.6	713
April	32.3	.0	16.8	1,000
May	25.3	7.0	17.9	1,100
June	39.5	21.2	24.5	1,460
July	25.3	.0	19.4	1,190
August	54	.0	36.8	2,260
September	66	42	54.5	3,240
The year				13,900
1904–5.				
October	59	19.8	46.7	2,870
November	22.0	18.1	18.6	1,110
December	19.0	16.0	17.9	1,100
January	66	0	31.4	1,930
February	74	0	44.5	2,470
March	97	0	49.8	3,060
April	78	0	55.0	3,270
May	76	0	41.0	2,520
June	71	0	42.0	2,500
July	66	56	60.7	3,730
August	81	51	65.8	4,050
September	78	51	67.3	4,000
The period	97	0		27,500
1905–6.				
October	66	41	48.2	2,960
November	50	29	33.7	2,010
December	34	25	29.8	1,830
January	59	33	37.5	2,310
February	64	32	47.3	2,630
March	71	0	41.8	2,570
April	74	0	65.2	3,880
May	72	0	66.2	4,070
June	72	64	70.1	4,170
July	72	66	71.1	4,370
August	72	42	68.9	4,240
September	66	52	59.6	3,550
The year	74	0	53.3	38,600
1906–7.				
October	68	61	63.7	3,920
November	67	52	57.9	3,450
December	76	56	66.5	4,090
January	76	0	73.5	4,520
February	76	76	76.0	4,220
March	77	56	73.6	4,530
April	76	73	75.9	4,520
May	76	0	65.7	4,040
June	70	70	70.0	4,170
July	69	69	69.0	4,240
August	69	69	69.0	4,240
September	69	0	63.2	3,760
The year	77	0	68.6	49,700
1907–8.				
October	77	63	70.3	4,320
November	76	60	73.9	4,400
December	72	54	58.7	3,610
January	76	0	51.0	3,140
February	78	0	69.2	3,980
March	78	0	57.0	3,500
April	77	74	76.6	4,560
May	77	61	70.5	4,330
June	67	53	59.6	3,550
July	69	56	62.3	3,830
August	68	52	61.8	3,800
September	75	42	56.8	3,380
The year	78	0	63.9	46,400
1908–9.				
October	66	45	55.8	3,430
November	65	37	40.8	2,430
December	56	36	41.4	2,550
January	77	35	57.0	3,500
February	76	0	67.1	3,730
March	76	76	76.0	4,670
April	76	76	76.0	4,520
May	76	73	73.3	4,510
June	81	0	65.4	3,890
July	75	59	66.5	4,090
August	73	55	61.4	3,780
September	69	52	58.8	3,500
The year	81	0	61.0	44,600
1909–10.				
October	65	45	55.4	3,410
November	63	.8	49.0	2,920
December	79	38	64.4	3,960
January	79	.0	44.7	2,750
February	76	62	69.7	3,870
March	79	.0	67.8	4,170
April	79	64	75.6	4,500
May	79	66	75.8	4,660
June	73	55	66.5	3,960
July	68	.0	45.3	2,790
August	68	51	59.5	3,660
September	70	51	58.4	3,480
The year	79	.0	60.9	44,100

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Monthly discharge of Southern California Edison Co.'s canal near Mentone, Calif., for 1896–1898, 1901, and 1904–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1910–11.					**1914–15.**				
October	68	46	57.5	3,540	October	70	41	52.1	3,200
November	52	41	45.0	2,680	November	52	37	41.0	2,440
December	45	41	42.4	2,610	December	70	37	43.8	2,690
January	73	0	55.9	3,440	January	79	0	47.9	2,950
February	73	68	71.8	3,990	February	79	59	71.1	3,950
March	73	60	72.1	4,430	March	79	59	75.3	4,630
April	73	70	71.8	4,270	April	79	41	76.5	4,550
May	76	70	73.5	4,520	May	79	79	75.9	4,670
June	78	0	72.8	4,330	June	79	79	79.0	4,700
July	77	0	58.8	3,620	July	79	79	79.0	4,860
August	70	57	63.5	3,900	August	79	79	79.0	4,860
September	70	55	61.1	3,640	September	79	64	73.0	4,340
The year	78	0	62.1	45,000	The year	79	0	66.1	47,800
1911–12.					**1915–16.**				
October	71	45	57.4	3,530	October	70	59	63.0	3,870
November	54	40	45.5	2,710	November	70	55	60.2	3,580
December	48	33	42.7	2,630	December	59	41	56.2	3,460
January	45	38	40.2	2,470	January	79	.0	38.3	2,350
February	38	32	35.6	2,050	February	.0	.0	.00	0
March	73	0	62.0	3,810	March	59	.0	5.00	307
April	81	66	76.4	4,550	April	74	55	64.5	3,840
May	81	66	74.2	4,560	May	85	0	76.2	4,690
June	68	49	58.0	3,450	June	85	85	85.0	5,060
July	62	44	55.5	3,410	July	85	85	85.0	5,230
August	62	49	54.3	3,340	August	85	45	78.9	4,850
September	58	45	53.5	3,180	September	85	79	81.6	4,860
The year	81	0	54.7	39,700	The year	85	.0	58.0	42,100
1912–13.					**1916–17.**				
October	56	37	48.9	3,010	October	85	79	84.6	4,200
November	44	29	34.1	2,030	November	85	70	74.7	5,440
December	41	27	33.0	2,030	December	79	70	71.3	4,380
January	45	13	30.7	1,890	January	79	64	74.2	4,560
February	71	32	40.4	2,240	February	85	59	69.8	3,880
March	65	38	46.9	2,880	March	85	85	85.0	5,230
April	71	46	56.2	3,340	April	85	0	80.6	4,800
May	60	37	53.0	3,260	May	85	79	83.3	5,120
June	63	44	51.6	3,070	June	79	0	71.9	4,280
July	60	0	38.6	2,370	July	79	74	78.5	4,830
August	60	41	53.5	3,290	August	85	79	84.0	5,160
September	60	41	53.7	3,200	September	85	85	85.0	5,060
The year	71	0	45.1	32,600	The year	85	0	78.6	56,900
1913–14.					**1917–18.**				
October	58	37	50.3	3,090	October	85	74	80.0	4,920
November	73	16	28.9	1,720	November	79	50	65.4	3,890
December	34	24	25.9	1,590	December	59	0	46.7	2,870
January	77	24	51.4	3,160	January	59	41	51.3	3,150
February	77	37	62.9	3,490	February	83	0	54.2	3,010
March	77	74	74.9	4,610	March	88	0	64.5	3,970
April	74	72	73.4	4,370	April	85	72	80.0	4,760
May	74	72	72.9	4,480	May	86	67	74.2	4,560
June	78	72	76.1	4,530	June	80	61	71.6	4,260
July	76	71	72.9	4,480	July	77	69	74.9	4,610
August	72	62	63.9	3,930	August	80	72	75.5	4,640
September	70	50	57.6	3,430	September	80	72	75.6	4,500
The year	78	16	59.2	42,900	The year	88	0	67.9	49,100

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Discharge measurements of Greenspot pipe line near Mentone, Calif., for 1896–1904.

Date.	Made by—	Discharge.
		Sec.-ft.
1896.		
Nov. 21	J. B. Lippincott	0.40
1898.		
Jan. 8	J. B. Lippincott	.38
Apr. 12	do	a 1.88
12	do	b 1.74
29	do	2.94
June 12	do	.63
July 23	do	2.20
Sept. 8	do	.00
Oct. 18	F. H. Olmsted	1.36
Nov. 9	do	.50
Dec. 8	do	.50
8	do	b .15
1899.		
Jan. 12	S. G. Bennett	.00
Feb. 18	do	a 3.53
18	do	b .35
Mar. 23	do	3.71
May 6	do	a 1.43
6	do	b .62
31	do	.14
July 15	do	a .59
15	do	b .44
27	do	a .64
27	do	b .54
Aug. 24	do	b .28
1900.		
Apr. 14	S. G. Bennett	2.15
July 13	do	a .00
Oct. 2	W. W. Cockins, jr	a .12
1901.		
Feb. 5	S. G. Bennett	a 0.00
Mar. 4	do	a 2.73
30	do	a .00
July 6	do	a 3.68
6	do	b 3.49
Aug. 20	do	.00
Oct. 8	do	5.77
Dec. 5	do	1.65
1902.		
May 31	S. G. Bennett	a 2.70
31	do	b 2.50
July 10	do	a .00
Sept. 3	W. W. Clapp	a .00
Nov. 5	S. G. Bennett	a 2.83
1903.		
Aug. 31	W. B. Clapp	a 6.3
1904.		
Jan. 29	W. B. Clapp	a 4.2
May 14	do	a 1.8
28	do	a 4.9
June 29	do	a 7.3
Sept. 21	do	a 6.0
Nov. 11	E. C. La Rue	a 1.1

a Intake. b Outlet (lower end).

Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Calif., for 1900–1901, 1903–1904, and 1911–1918.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1900.							
1	2.32	1.08	1.78	1.56	7.96	0.00	0.48
2	2.44	2.32	1.44	1.56	4.42	.98	.48
3	2.06	2.32	2.20	3.60	7.96	1.06	.48
4	.60	2.32	2.32	3.72	7.96	.50	.40
5	1.86	3.46	2.58	3.72	.....	.26	.48
6	3.72	3.18	2.94	3.72	.....	.24	.44
7	3.72	3.32	2.94	1.88	.....	.50	1.26
8	3.72	.90	2.94	1.88	.....	.50	1.26
9	2.32	.82	2.94	3.32	.....	.50	1.06
10	2.58	1.08	1.78	3.32	.90	.38	2.78
11	2.58	1.08	1.78	3.32	2.10	.60	.68
12	2.58	1.56	1.78	3.18	.....	.66	.10
13	2.58	1.88	2.68	.00	.....	.66	.20
14	4.14	2.32	3.18	.00	.....	.26	2.42
15	4.72	1.26	.72	1.26	.....	.16	3.74
16	4.14	1.44	.82	.00	.58	.16	.....
17	4.14	2.10	.82	.00	3.86	.12	.....
18	2.32	2.58	.82	.00	3.86	.12	.....
19	1.00	2.80	.82	.00	3.86	.24	.....
20	.40	3.86	.82	.00	.....	.10	.....
21	.90	3.00	.82	.00	1.66	.10	.....
22	.98	3.06	.82	5.94	1.66	.16	.....
23	.82	2.58	2.94	6.76	1.66	.22	.....
24	.72	2.58	2.68	6.20	1.36	.22	.....
25	.72	1.16	2.68	1.16	1.36	.24	.....
26	.66	1.36	2.68	1.36	1.56	.38	.....
27	.66	1.36	.82	1.66	1.56	.44	.....
28	.98	1.78	2.68	1.26	1.56	.50	.....
29	1.08	.....	.90	5.94	.98	.50	.....
30	1.08	.....	.90	3.32	.98	.46	.....
31	1.08	.....	.90	.....	.98	.....	.....

NOTE.—No record May 5-9 and 11-15. No water from Bear Valley July 15 to close of year.

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Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Calif., for 1900–1901, 1903–1904, and 1911–1918—Continued.

Date.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Date.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1901.								1901.							
1	3.0	3.5	2.5	6.0	6.0	3.0	1.3	16	1.5	1.8	2.5	6.0	6.0	4.3	1.5
2	.5	2.5	2.5	6.0	6.0	3.0	1.3	17	1.5	1.8	.0	4.0	6.0	.5	1.8
3	.5	3.5	2.5	6.0	6.0	2.0	1.6	18	2.5	1.8	.0	4.0	6.0	.5	1.5
4	.5	3.5	2.5	6.0	6.0	2.0	1.7	19	2.5	1.8	.0	4.0	6.0	.5	1.8
5	.5	3.5	2.5	6.0	6.0	2.0	1.7	20	3.5	1.8	.0	4.0	6.0	.0	1.6
6	.5	3.5	.0	6.0	6.0	.0	1.8	21	3.5	1.8	.0	4.0	6.0	.0	1.6
7	.5	1.6	3.0	6.0	6.0	.0	1.1	22	.0	2.5	.0	4.0	6.0	1.5	1.6
8	.5	1.6	3.0	6.0	6.0	.0	1.2	23	3.5	2.5	.0	4.0	6.0	1.5	.0
9	.5	1.6	3.0	6.0	6.0	.0	1.8	24	3.5	2.5	2.5	6.0	6.0	1.6	.0
10	.5	1.6	3.0	6.0	6.0	1.7	1.8	25	2.5	2.5	3.0	6.0	6.0	1.8	.0
11	1.5	1.6	3.0	6.0	6.0	3.5	1.4	26	2.5	2.5	5.0	6.0	6.0	2.1	.0
12	1.5	1.6	5.5	6.0	4.0	2.6	1.3	27	2.5	2.5	5.0	6.0	6.0	1.8	.0
13	1.5	1.6	2.5	6.0	4.0	2.6	1.3	28	2.5	2.5	8.0	6.0	6.0	1.8	.0
14	1.5	1.8	2.5	6.0	4.0	3.7	1.6	29	3.8	2.5	6.0	6.0	6.0	1.6	.0
15	1.5	1.8	2.5	6.0	4.0	4.5	1.4	30	3.5	2.5	6.0	6.0	6.0	1.3	2.5
								31	.....	2.5	6.0	.....	6.0	.....	2.5

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1903.			1903.			1903.		
1	.....	6.3	11	.....	5.3	21	9.0	6.6
2	.....	.0	12	.....	6.2	22	7.6	6.9
3	.....	5.1	13	.....	8.3	23	7.5	6.9
4	.....	5.1	14	6.2	7.6	24	7.5	6.9
5	.....	5.1	15	6.2	7.6	25	9.9	6.9
6	.....	5.3	16	6.2	7.6	26	9.0	5.6
7	.....	5.6	17	6.9	7.2	27	6.5	6.9
8	.....	6.2	18	7.6	6.9	28	5.9	10.7
9	.....	5.3	19	7.6	6.5	29	6.5	6.9
10	.....	5.0	20	9.0	6.6	30	6.3	9.9
						31	6.2	.....

NOTE.—No flow Apr. 1 to Aug. 13.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	4.8	6.5	1.4	1.9	3.1	3.7	0.0	3.7	5.1	7.3	3.0	1.7
2	4.8	5.4	1.4	1.9	3.4	3.7	1.7	3.7	5.1	7.3	2.8	.3
3	4.8	6.0	1.2	1.9	3.1	3.1	1.7	3.7	5.1	6.6	3.0	1.1
4	4.4	3.0	1.2	1.9	3.1	3.1	1.7	3.7	5.1	6.6	3.0	5.1
5	4.4	2.4	.9	1.9	4.8	3.1	1.7	3.7	5.4	7.3	3.0	.6
6	4.4	1.7	1.5	2.1	3.7	2.6	1.7	3.7	5.7	7.0	3.9	.6
7	.0	1.7	1.9	2.1	3.1	2.6	3.7	3.7	5.4	5.7	4.2	5.7
8	.0	1.7	3.4	1.9	3.1	2.6	3.7	3.7	5.7	5.1	4.2	5.4
9	.9	1.7	1.9	2.1	2.6	2.4	3.7	3.4	5.7	3.9	3.4	5.1
10	4.2	1.7	2.2	2.2	2.6	2.2	3.7	3.1	5.4	4.8	5.7	4.5
11	7.3	1.7	2.6	2.2	2.6	3.7	3.7	3.1	8.0	3.9	6.0	4.5
12	1.6	1.7	3.8	2.2	2.6	3.7	3.7	1.7	6.6	4.2	4.2	3.4
13	1.3	1.7	2.2	2.2	2.6	3.1	2.6	1.7	6.6	4.2	3.7	4.8
14	1.3	1.7	2.2	2.2	2.6	3.1	3.7	1.7	5.1	4.2	2.6	4.8
15	4.8	1.7	2.1	2.2	2.6	3.4	3.7	1.3	5.4	3.7	.0	4.8
16	4.8	1.7	2.2	2.2	2.6	3.4	3.7	2.6	5.4	3.9	.0	4.8
17	7.0	1.9	2.2	2.2	3.7	3.1	3.7	2.6	5.4	3.7	.0	4.8
18	9.0	1.9	2.2	2.2	3.7	3.1	3.1	2.6	5.4	3.7	2.6	4.8
19	8.7	1.9	2.2	2.4	3.1	3.1	3.7	2.6	5.4	4.5	2.6	4.8
20	7.0	1.7	2.2	2.4	3.1	2.6	5.1	3.1	5.4	4.5	8.8	4.8
21	6.6	1.7	3.4	2.4	2.9	1.7	2.6	2.5	5.4	4.8	4.8	4.8
22	5.8	1.7	3.4	4.8	2.6	.0	3.1	3.6	5.4	4.8	6.0	6.9
23	6.0	1.7	2.6	5.7	3.7	.0	2.6	3.6	5.4	4.8	5.2	6.0
24	6.0	1.7	2.2	5.7	3.7	.0	3.1	3.6	5.7	3.2	5.1	4.5
25	6.0	1.7	2.2	4.8	3.7	.0	3.4	3.8	5.7	3.4	5.4	5.1
26	5.7	1.7	1.9	4.8	3.7	.0	3.4	5.1	5.4	3.4	5.1	5.4
27	7.3	1.7	1.9	4.8	2.6	.0	4.2	5.4	6.0	3.4	5.1	5.8
28	7.3	1.7	1.9	4.2	2.6	2.6	3.7	4.8	7.0	3.4	4.8	5.8
29	6.9	1.7	1.9	4.2	2.6	2.6	3.7	5.1	7.3	3.4	4.8	5.8
30	7.2	1.7	1.9	4.2	.....	2.6	3.7	5.1	7.3	3.4	4.8	5.8
31	7.2	.....	1.9	4.2	.....	2.6	.....	4.8	.....	3.0	1.1	.....

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Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Calif., for 1900–1901, 1903–1904, and 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1904.				1904.				1904.			
1	5.8	0.9	1.3	11	4.4	1.1	0.8	21	5.8	1.3	0.8
2	5.1	1.8	1.3	12	2.6	.8	1.3	22	6.5	1.3	1.2
3	5.8	.9	1.3	13	4.4	.8	2.4	23	8.4	1.3	1.1
4	5.1	.7	.6	14	5.1	.9	1.5	24	8.4	1.3	1.7
5	5.8	.7	.5	15	5.1	1.5	.8	25	6.1	1.9	1.9
6	7.2	.8	1.5	16	5.1	.9	.8	26	7.2	.9	1.9
7	5.8	.6	1.3	17	5.1	1.1	.8	27	8.0	1.5	2.2
8	5.8	.9	1.5	18	4.4	.8	1.8	28	7.2	1.3	2.2
9	1.1	.8	1.3	19	4.4	1.5	.9	29	5.1	1.3	1.1
10	4.4	1.3	1.3	20	5.1	.6	1.2	30	2.1	1.5	1.3
								31	1.3	.....	1.7

Day.	Sept.	Day.	Sept.	Day.	Sept.
1911.		1911.		1911.	
1	.....	11	1.8	21	0.5
5	.....	12	.0	22	.6
3	.....	13	.0	23	.6
4	.....	14	.0	24	.5
5	.....	15	.0	25	.0
6	.....	16	.0	26	9.1
7	1.3	17	1.0	27	9.0
8	1.6	18	2.0	28	9.0
9	1.6	19	9.0	29	7.0
10	1.6	20	7.5	30	7.0
				31	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	6.0	0.0	6.0	3.0	5.0	4.0	0.0	1.0	4.0	4.0	4.5	5.0
2	6.0	.0	5.0	3.0	5.0	4.0	.0	1.0	4.0	2.0	4.5	5.0
3	.0	.0	5.0	.0	5.0	4.0	.0	1.0	3.5	2.0	4.5	3.0
4	.0	.0	4.0	.0	5.0	3.0	.0	1.0	3.5	2.0	3.0	3.0
5	.0	.0	4.0	.0	5.0	4.0	.0	1.0	3.5	2.0	3.0	3.0
6	.0	.5	4.0	.0	4.5	5.0	.0	4.0	3.5	2.0	3.0	4.0
7	.0	7.0	.0	.0	4.5	.0	.0	4.0	3.5	2.0	3.0	4.0
8	.0	7.0	2.5	5.0	4.5	.0	.0	4.0	3.5	6.0	5.0	4.0
9	1.0	7.0	2.5	5.0	4.5	.0	.0	4.0	3.5	3.2	5.0	4.0
10	2.3	7.0	2.5	5.0	4.5	.0	1.0	4.0	4.0	3.2	5.0	4.0
11	6.5	6.0	2.5	5.0	4.5	.0	1.0	4.0	4.0	3.2	5.0	4.0
12	6.5	6.0	2.5	5.0	4.5	.0	1.0	4.0	4.0	3.2	5.5	4.0
13	6.5	6.0	2.5	5.0	4.5	.0	1.0	4.0	4.0	3.2	5.5	5.5
14	6.5	6.0	2.5	5.0	4.5	.0	1.0	4.0	4.0	5.2	2.5	5.5
15	6.5	6.0	3.0	5.0	4.5	.0	1.0	4.0	4.0	5.2	3.0	5.5
16	6.5	6.0	3.0	5.0	4.5	.0	1.0	4.0	4.0	5.2	3.0	5.5
17	7.5	.0	3.5	4.0	2.5	.0	1.0	4.0	4.0	5.2	3.0	5.5
18	1.5	.0	3.5	4.0	2.5	.0	1.0	4.0	4.0	5.2	3.0	5.5
19	3.0	.0	3.5	4.0	2.5	.0	1.0	4.0	4.0	5.2	3.0	4.5
20	1.0	.0	3.5	3.0	2.5	.0	1.0	4.0	4.0	5.2	5.0	4.5
21	1.0	.0	.0	3.0	3.0	.0	1.0	4.0	4.0	3.5	5.0	4.5
22	.0	.0	.0	3.0	3.0	.0	1.0	5.5	4.0	3.5	5.0	4.5
23	.0	7.3	.0	3.0	3.0	.0	1.0	5.5	4.0	4.5	5.0	4.5
24	.4	7.3	.0	3.0	3.0	.0	1.0	5.5	4.0	4.5	5.0	4.5
25	.0	7.3	.8	3.0	3.0	.0	1.0	5.5	4.0	4.5	4.0	4.5
26	.0	7.3	1.0	3.0	5.0	.0	1.0	5.5	4.0	4.5	4.0	2.5
27	.0	7.3	1.0	4.0	5.0	.0	1.0	5.5	4.0	4.5	4.0	2.5
28	.0	7.3	2.0	4.0	5.0	.0	1.0	5.5	4.0	4.5	1.0	2.5
29	.0	7.3	2.0	4.0	4.0	.0	1.0	5.5	4.0	4.5	5.0	2.5
30	.0	7.3	3.0	4.5	.....	.0	1.0	5.5	4.0	4.5	5.0	2.5
31	.0	.....	3.0	4.5	.....	.0	.....	4.0	.....	4.5	5.0	.....

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Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Calif., for 1900–1901, 1903–1904, and 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	4.5	3.5	2.5	0.8	1.4	2.5	2.5	3.5	6.0	2.0	4.0	2.0
2	4.5	3.5	2.5	.8	1.4	2.5	2.5	3.5	6.0	2.0	4.0	2.0
3	6.5	3.5	2.5	1.5	1.4	2.5	2.5	3.5	3.0	3.0	4.0	4.0
4	6.5	3.5	2.5	1.5	1.4	2.5	2.5	3.5	3.0	3.0	6.5	4.0
5	6.5	3.5	2.5	1.5	1.9	2.5	6.5	2.0	3.0	3.0	6.5	4.0
6	6.5	3.5	2.5	1.5	1.9	2.5	6.5	2.0	6.0	5.0	6.5	4.0
7	6.5	3.5	2.5	1.0	1.9	2.5	6.5	2.0	6.0	5.0	6.5	4.0
8	2.0	3.5	2.5	1.0	2.5	2.5	6.5	4.0	6.0	5.0	6.5	4.0
9	2.0	3.5	2.5	1.0	2.5	2.5	6.5	4.0	6.0	5.0	6.5	2.0
10	2.0	3.5	2.5	4.0	2.5	2.5	2.5	5.0	4.0	5.0	2.5	2.0
11	2.0	3.5	2.5	1.5	2.5	6.5	2.5	5.0	4.0	1.3	1.5	1.0
12	2.0	3.5	2.5	1.5	2.5	6.5	2.5	5.0	4.0	1.3	1.5	1.0
13	2.0	3.5	2.5	3.0	2.5	6.5	2.5	5.0	2.0	1.3	1.5	1.0
14	3.0	3.5	2.5	3.0	2.5	6.5	3.5	.5	2.0	1.3	1.5	5.0
15	3.0	3.5	2.5	3.0	2.5	6.5	3.5	.5	2.0	5.0	4.5	5.0
16	3.0	3.5	2.5	3.0	2.5	6.5	3.5	.5	6.0	5.0	4.5	5.0
17	3.0	3.5	2.5	3.0	2.5	6.5	3.5	.5	6.0	5.0	4.5	5.0
18	3.0	3.5	2.5	3.0	2.5	6.5	3.5	6.0	6.0	.0	3.0	5.0
19	3.0	3.5	2.5	3.0	2.5	6.5	3.5	6.0	6.0	.0	3.0	3.0
20	7.0	3.5	2.5	3.0	2.5	6.5	3.5	6.0	6.0	.0	3.5	3.0
21	7.0	3.5	2.5	3.0	2.5	6.5	3.5	4.0	4.0	.0	3.5	3.0
22	7.0	3.5	2.5	3.0	2.5	6.5	3.5	4.0	4.0	.0	3.5	3.0
23	7.0	3.5	2.5	3.0	2.5	6.5	3.5	2.0	1.5	.0	3.5	1.0
24	7.0	3.5	2.5	3.0	2.5	8.5	3.5	2.0	1.5	.0	3.5	1.0
25	7.0	3.5	2.5	3.0	2.5	8.5	3.5	2.0	1.5	.0	3.5	4.0
26	7.0	3.5	1.2	3.0	2.5	8.5	3.5	2.0	6.0	4.0	3.5	4.0
27	7.0	3.5	2.2	3.0	2.5	8.5	3.5	2.0	6.0	4.0	3.5	4.0
28	7.0	2.5	.8	3.0	2.5	8.5	3.5	6.0	6.0	4.0	2.0	1.5
29	3.5	2.5	.8	3.0	.....	8.5	3.5	6.0	6.0	4.0	2.0	1.5
30	3.5	2.5	.8	3.0	.....	8.5	3.5	6.0	6.0	4.0	2.0	1.5
31	5.5	.....	.8	.0	.....	8.5	.....	6.0	.....	4.0	2.0	.....
1913–14.												
1	1.5	1.4	2.5	2.0	2.0	4.0	6.0	7.0	5.5	7.6	5.0	4.0
2	1.5	1.4	2.5	2.0	2.0	4.0	6.0	3.6	5.5	7.6	5.0	4.0
3	2.5	1.4	2.5	2.0	2.0	4.0	6.0	3.6	5.5	7.6	5.0	4.0
4	2.5	2.9	2.5	2.0	2.0	4.0	6.0	3.6	5.5	7.6	5.0	4.0
5	4.5	2.9	2.5	2.0	5.7	4.0	6.0	3.6	5.5	7.6	5.0	4.0
6	4.5	2.9	2.5	2.0	5.7	4.0	6.0	3.6	5.5	7.6	5.0	4.0
7	4.5	2.5	2.5	2.0	5.0	4.0	6.0	3.6	5.5	7.6	5.0	4.0
8	4.5	2.5	2.5	2.0	5.0	4.0	6.0	3.6	5.5	7.6	5.0	4.0
9	4.5	2.5	2.5	2.0	5.0	4.0	6.0	3.6	5.5	7.6	5.0	4.0
10	4.5	1.2	2.5	2.0	5.0	6.0	6.0	3.6	5.5	7.6	5.0	4.0
11	4.5	1.2	2.5	2.0	6.0	6.0	6.0	3.6	5.5	7.6	5.0	3.0
12	4.5	1.2	2.5	2.0	6.0	6.0	6.0	3.6	5.5	7.6	5.0	3.0
13	2.0	1.2	1.5	2.0	6.0	6.0	6.0	3.6	5.5	7.6	5.0	6.0
14	2.0	1.2	1.5	2.0	6.0	6.0	6.0	3.6	6.0	7.6	5.0	6.0
15	4.5	1.2	1.5	2.0	6.0	6.0	6.0	3.6	6.0	7.6	5.0	6.0
16	4.5	1.2	1.5	2.0	6.0	6.0	6.0	3.6	6.0	7.6	6.5	6.0
17	4.5	1.2	1.5	2.5	6.0	6.0	6.0	5.5	6.0	7.6	6.5	6.0
18	4.5	2.5	2.0	2.5	6.0	6.0	6.0	5.5	6.0	7.6	6.5	6.0
19	2.5	2.5	2.0	2.5	6.0	6.0	6.0	5.5	6.0	7.6	5.0	6.0
20	.5	2.5	2.0	2.5	6.0	6.0	7.0	5.5	6.0	7.6	5.0	5.0
21	.5	2.5	2.0	2.5	4.0	6.0	7.0	5.5	6.0	7.6	5.0	5.0
22	3.0	2.5	2.0	2.5	4.0	6.0	7.0	5.5	6.0	7.6	5.0	5.0
23	3.0	2.5	2.0	2.5	4.0	6.0	7.0	5.5	6.0	7.6	5.0	5.0
24	3.0	2.5	2.0	2.5	1.0	6.0	7.0	5.5	7.0	7.6	5.0	6.0
25	2.0	2.5	2.0	2.5	4.0	6.0	7.0	5.5	7.0	7.6	5.0	6.0
26	2.0	2.5	2.0	2.5	4.0	6.0	7.0	5.5	7.0	7.6	6.5	6.0
27	2.0	2.5	2.0	.0	4.0	6.0	7.0	5.5	7.0	7.6	6.5	6.0
28	1.4	2.5	2.0	.0	4.0	6.0	7.0	5.5	7.0	7.6	6.5	6.0
29	1.4	2.5	2.0	.0	.....	6.0	3.2	5.5	7.0	7.6	6.5	6.0
30	1.4	2.5	2.0	.0	.....	6.0	7.0	5.5	7.0	5.0	4.0	6.0
31	1.4	.....	2.0	2.0	.....	6.0	.....	5.5	.....	5.0	4.0	.....

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Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Calif., for 1900–1901, 1903–1904, and 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	6.0	5.0	4.0	2.0	2.0	2.0	4.5	5.0	6.0	6.0	7.0	6.0
2	6.0	5.0	4.0	2.0	2.0	2.0	4.5	5.0	6.0	6.0	7.0	6.0
3	6.0	5.0	4.0	2.0	2.0	2.0	4.5	5.0	6.0	6.0	7.0	6.0
4	5.0	5.0	4.0	2.0	2.0	4.0	4.0	5.0	6.0	6.0	7.0	6.0
5	5.0	5.0	4.0	2.0	2.0	4.0	4.0	5.0	6.0	6.0	7.0	6.0
6	5.0	5.0	4.0	2.0	2.0	4.0	4.0	5.0	6.0	6.0	7.0	6.0
7	5.0	5.0	4.0	2.0	2.0	4.0	4.0	5.0	6.0	6.0	7.0	6.0
8	5.0	5.0	4.0	2.0	2.0	4.0	4.0	5.0	6.0	6.0	7.0	6.0
9	3.0	5.0	4.0	2.0	2.0	1.0	4.0	5.0	6.0	6.0	7.0	6.0
10	3.0	5.0	4.0	2.0	2.0	1.0	4.0	5.0	6.0	6.0	7.0	6.0
11	3.0	5.0	4.0	2.0	2.0	1.0	4.0	5.0	6.0	6.0	7.0	6.0
12	3.0	5.0	4.0	2.0	2.0	1.0	5.0	5.0	6.0	6.0	7.0	6.0
13	5.0	5.0	4.0	2.0	2.0	1.0	5.0	5.0	6.0	6.0	7.0	6.0
14	5.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	7.0	6.0
15	5.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	7.0	6.0
16	5.0	5.0	4.0	.0	2.0	1.0	7.0	5.0	6.0	6.0	7.0	6.0
17	5.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	5.3	6.0
18	5.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	5.3	6.0
19	5.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	5.3	6.0
20	3.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	5.3	6.0
21	4.0	5.0	4.0	2.0	2.0	1.0	7.0	5.0	6.0	6.0	5.3	6.0
22	4.0	5.0	2.0	2.0	2.0	2.0	7.0	5.0	6.0	6.0	5.3	6.0
23	6.0	5.0	2.0	2.0	2.0	2.0	7.0	5.0	6.0	6.0	6.0	6.0
24	6.0	6.0	2.0	2.0	2.0	4.5	5.0	5.0	6.0	6.0	6.0	6.0
25	6.0	6.0	2.0	2.0	2.0	4.5	5.0	5.0	6.0	7.0	6.0	6.0
26	6.0	3.0	2.0	2.0	2.0	4.5	5.0	5.0	6.0	7.0	6.0	7.0
27	6.0	4.0	2.0	2.0	2.0	4.5	5.0	6.0	6.0	7.0	6.0	8.5
28	6.0	4.0	2.0	2.0	2.0	4.5	5.0	6.0	6.0	7.0	6.0	8.5
29	6.0	4.0	2.0	2.0	.....	4.5	5.0	6.0	6.0	7.0	6.0	5.0
30	6.0	4.0	2.0	2.0	.....	4.5	5.0	6.0	6.0	7.0	6.0	5.0
31	5.0	.....	2.0	2.0	.....	4.5	.....	6.0	.....	7.0	6.0	.....
1915–16.												
1	5	5	5	2	.....	.....	1	8.5	8.5	8.5	8.5	8.5
2	5	7	5	2	.....	.....	1	8.5	8.5	8.5	8.5	8.5
3	5	7	5	2	.....	.....	1	8.5	8.5	8.5	8.5	8.5
4	5	7	5	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
5	5	7	5	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
6	7	5	5	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
7	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
8	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
9	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
10	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
11	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
12	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
13	7	5	2	2	.....	.....	2	8.5	8.5	8.5	8.5	8.5
14	7	5	2	2	.....	.....	5	8.5	8.5	8.5	8.5	8.5
15	7	5	2	2	.....	.....	5	8.5	8.5	8.5	8.5	8.5
16	7	5	2	2	.....	.....	5	8.5	8.5	8.5	8.5	8.5
17	7	5	2	2	.....	.....	5	8.5	8.5	8.5	8.5	8.5
18	7	5	2	2	.....	.....	5	8.5	8.5	8.5	8.5	8.5
19	7	5	2	.....	.....	.....	5	8.5	8.5	8.5	8.5	8.5
20	7	5	2	.....	.....	.....	5	8.5	8.5	8.5	8.5	8.5
21	7	5	2	.....	.....	.....	5	.0	8.5	8.5	8.5	8.5
22	7	5	2	.....	.....	.....	5	7	8.5	8.5	8.5	8.5
23	7.5	5	2	.....	.....	.....	5	7	8.5	8.5	8.5	8.5
24	7.5	5	2	.....	.....	.....	5	7	8.5	8.5	8.5	8.5
25	7.5	5	2	.....	.....	.....	5	7	8.5	8.5	8.5	8.5
26	7.5	5	2	.....	.....	.....	5	8.5	8.5	8.5	8.5	8.5
27	7.5	5	2	.....	.....	.....	5	8.5	8.5	8.5	8.5	8.5
28	5	5	2	.....	.....	.....	5	8.5	8.5	8.5	8.5	8.5
29	5	5	2	.....	.....	0.6	8.5	8.5	8.5	8.5	8.5	8.5
30	5	5	2	.....	.....	1	8.5	8.5	8.5	8.5	8.5	8.5
31	5	.....	2	.....	.....	1	.....	8.5	.....	8.5	8.5	.....

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Daily discharge, in second-feet, of Greenspot pipe line near Mentone, Calif., for 1900–1901, 1903–1904, and 1911–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	8.5	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
2	8.5	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
3	8.5	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
4	8.5	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
5	8.5	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
6	8.5	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
7	5.0	8.7	5.5	2.0	3.0	4.5	6.5	8.5	8.5	8.5	9.0	9.0
8	5.0	8.7	5.5	2.0	4.5	4.5	2.1	8.5	8.5	8.5	9.0	9.0
9	5.5	8.7	5.5	2.0	4.5	4.5	5.7	8.5	8.5	8.5	9.0	9.0
10	5.5	8.7	5.5	2.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
11	5.5	8.7	5.5	4.5	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
12	5.5	8.7	5.5	4.5	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
13	5.5	8.5	5.5	4.5	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
14	1.3	8.7	5.5	4.5	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
15	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
16	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
17	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	.0	8.5	9.0	9.0
18	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
19	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
20	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
21	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
22	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
23	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
24	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
25	1.3	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
26	5.1	8.7	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
27	8.0	5.5	5.5	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
28	6.0	5.5	2.0	3.0	4.5	4.5	8.5	8.5	8.5	8.5	9.0	9.0
29	6.0	5.5	2.0	3.0	.....	4.5	8.5	8.5	8.5	8.5	9.0	9.0
30	6.0	5.5	2.0	3.0	.....	6.5	8.5	8.5	8.5	9.0	9.0	9.0
31	8.7	.....	2.0	3.0	.....	6.5	.....	8.5	.....	9.0	9.0	.....
1917–18.												
1	9	9	9	9	4.6	4.6	2.5	9	9	9	9	9
2	9	9	6.5	9	4.6	4.6	2.5	9	9	9	9	9
3	9	9	9	9	4.6	4.6	2.5	9	9	9	9	9
4	9	9	3.0	9	4.6	4.6	2.5	9	9	9	9	9
5	9	9	.0	9	4.6	4.6	2.5	9	9	9	9	9
6	9	9	.0	9	4.6	.0	4.5	9	9	9	9	9
7	9	9	6.4	9	4.6	.0	4.5	9	9	9	9	9
8	9	9	9	9	4.6	.0	7.5	9	9	9	9	9
9	9	9	9	9	4.6	.0	7.5	9	9	9	9	9
10	9	9	9	9	5.5	.0	7.5	9	9	9	9	9
11	9	9	9	9	5.5	.0	7.5	9	9	9	9	9
12	9	9	9	9	8.5	.0	7.5	9	9	9	9	9
13	9	9	9	9	8.5	.0	7.5	9	9	9	9	9
14	9	9	9	9	8.5	.0	7.5	9	9	9	9	9
15	9	9	9	9	8.5	2.5	7.5	9	9	9	9	9
16	9	9	9	9	8.5	2.5	7.5	9	9	9	9	9
17	9	9	9	9	8.5	2.5	7.5	9	9	9	9	9
18	9	9	9	9	8.5	2.5	7.5	9	9	9	9	9
19	9	9	9	9	.0	2.5	8	9	9	9	9	9
20	9	9	9	9	4.6	2.5	8	9	9	9	9	9
21	9	9	9	9	4.6	2.5	8	9	9	9	9	9
22	9	9	9	9	4.6	2.5	8	9	9	9	9	9
23	9	9	9	9	4.6	2.5	8	9	9	9	9	9
24	9	9	9	9	4.6	2.5	9	9	9	9	9	9
25	9	9	9	9	4.6	2.5	9	9	9	9	9	9
26	9	9	9	9	4.6	2.5	9	9	9	9	9	9
27	9	9	9	9	4.6	2.5	9	9	9	9	9	9
28	9	9	9	9	4.6	2.5	9	9	9	9	9	9
29	9	9	9	9	.....	2.5	9	9	9	9	9	9
30	9	9	9	4.6	.....	2.5	9	9	9	9	9	9
31	9	.....	9	4.6	.....	2.5	.....	9	.....	9	9	.....

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Monthly discharge of Greenspot pipe line near Mentone, Calif., for 1897–1901, 1903–1904, and 1911–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1897.				
August			21.5	1,320
September			15.8	940
1897–98.				
October 1–21			13.2	550
April			17.0	1,010
May			17.2	1,060
June			13.2	786
July			9.1	560
August			9.1	560
September			8.2	488
1898–99.				
October			9.0	553
November			10	595
December			10.7	658
January 1–9			11	196
February			11.6	644
March			12.2	750
April			11.8	702
May			11.2	689
June			5.4	300
July			5.8	312
August			5.8	312
September			4.1	244
1899–1900.				
October			6.6	406
November			8.6	512
December			9.5	584
January			2.1	129
February			2.5	139
March			1.5	92
April			2.3	137
May			1.9	117
June			.4	24
July 1–15			1.1	33
August			0	0
September			0	0
1900–1901.				
October			0	0
November			0	0
December			0	0
June			1.5	89
July			2.3	141
August			2.7	166
September			5.5	327
1901.				
October			5.7	350
November			1.7	101
December			1.2	74
1903.				
April	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	9.0	0	4.24	261
September	10.7	0	6.43	382
The period				644
1903–4.				
October	9.0	.0	5.08	312
November	6.5	1.7	2.21	131
December	3.8	.9	2.13	131
January	5.7	1.9	2.97	183
February	4.8	2.6	3.10	178
March	3.7	.0	2.37	146
April	5.1	.0	3.12	186
May	5.4	1.3	3.44	212
June	8.0	5.1	5.75	342
July	7.3	3.0	4.62	284
August	8.8	.0	3.81	234
September	6.0	.3	4.36	259
The year	9.0	.0		2,600
1904.				
October	8.4	1.1	5.28	325
November	1.9	.6	1.10	65.5
December	2.4	.6	1.36	83.6
The period				474
1911.				
September 7–30	9.1	.0	2.95	140
1911–12.				
October	7.5	.0	2.22	136
November	7.3	.0	4.10	244
December	6.0	.0	2.53	156
January	5.0	.0	3.39	208
February	5.0	2.5	4.09	235
March	5.0	.0	.77	47
April	1.0	.0	.70	42
May	5.5	1.0	3.95	243
June	4.0	3.5	3.88	231
July	6.0	2.0	3.93	242
August	5.5	1.0	4.10	252
September	5.5	2.5	4.13	246
The year	7.5	.0	3.14	2,280
1912–13.				
October	7	2.0	4.74	291
November	3.5	2.5	3.40	202
December	2.5	.8	2.23	137
January	4	.0	2.31	142
February	2.5	1.4	2.28	127
March	8.5	2.5	5.73	352
April	6.5	2.5	3.73	222
May	6	.5	3.55	218
June	6	1.5	4.52	269
July	5	.0	2.65	163
August	6.5	1.5	3.71	228
September	5	1	3.02	180
The year	8.5	0	3.51	2,530
1913–14.				
October	4.5	.5	2.91	179
November	2.9	1.2	2.08	124
December	2.5	1.5	2.11	130
January	2.5	.0	1.90	117
February	6.0	1.0	4.59	255
March	6.0	4.0	5.42	333
April	7.0	3.2	6.24	371
May	7.0	3.6	4.63	285
June	7.0	5.5	6.02	358
July	7.6	5.0	7.43	457
August	6.5	4.0	5.27	324
September	6.0	3.0	5.00	298
The year	7.6	.0	4.46	3,230
1914–15.				
October	6.0	3.0	4.97	306
November	6.0	3.0	4.87	290
December	4.0	2.0	3.35	206
January	2.0	.0	1.94	119
February	2.0	2.0	2.00	111
March	4.5	1.0	2.55	157
April	7.0	4.0	5.35	318
May	6.0	5.0	5.16	317
June	6.0	6.0	6.00	357
July	7.0	6.0	6.23	383
August	7.0	5.3	6.38	392
September	8.5	5.0	6.13	365
The year	8.5	.0	4.59	3,320
1915–16.				
October	7.5	5	6.50	400
November	7	5	5.27	314
December	5	2	2.58	159
January	2	0	1.16	71
February	.0	0	.00	0
March	1	0	.08	5

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Monthly discharge of Greenspot pipe line near Mentone, Calif., for 1897–1901, 1903–1904, and 1911–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1915–16.					1916–17.				
April	8.5	1	3.83	228	August	9.0	9.0	9.00	553
May	8.5	0	8.03	494	September	9.0	9.0	9.00	536
June	8.5	8.5	8.50	506	The year	9.0	.0	6.72	4,860
July	8.5	8.5	8.50	523	1917–18.				
August	8.5	8.5	8.50	523	October	9	9	9.0	553
September	8.5	8.5	8.50	506	November	9	9	9.0	536
The year	8.5	.0	5.13	3,730	December	9	.0	8.06	496
1916–17.					January	9	4.6	8.72	536
October	8.7	1.3	4.64	285	February	8.5	.0	5.48	304
November	8.7	5.5	8.27	492	March	4.6	.0	2.11	130
December	5.5	2.0	5.05	311	April	9	2.5	6.90	411
January	4.5	2.0	2.87	176	May	9	9	9.0	553
February	4.5	3.0	4.12	229	June	9	9	9.0	536
March	6.5	4.5	4.63	285	July	9	9	9.0	553
April	8.5	2.1	7.73	460	August	9	9	9.0	553
May	8.5	8.5	8.50	523	September	9	9	9.0	536
June	8.5	.0	8.22	489	The year	9	.0	7.87	5,700
July	9.0	8.5	8.53	524					

MILL CREEK IN CANYON AT HEADWORKS OF CRAFTON CANAL, CALIF.

Mill Creek is one of the larger tributaries of Santa Ana River. It rises on the western slope of the San Bernardino Mountains, draining the area immediately south of the headwaters of Santa Ana River. Mill Creek appears from its canyon about 5 miles east of Redlands. The Crafton Water Co. diverts practically all the water of this creek at the mouth of the canyon. The water passes over a weir, and the volume was therefore determined with considerable accuracy. The records have been furnished by Mr. Herbert Garstine, president of the Crafton Water Co. They are particularly accurate for low-water measurements.

Discharge measurements of Mill Creek at headworks of Crafton canal, Calif., for 1896–1905.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
1896.		*Sec.-feet.*	1901.		*Sec.-feet.*
July 29	J. H. Quinton	14.2	Mar. 30	S. G. Bennett	20
1898.			July 6	do	23.3
Apr. 12	J. B. Lippincott	15.7	Dec. 5	do	14.5
29	do	18.9	1902.		
June 12	do	18.1	Apr. 5	S. G. Bennett	21
July 23	do	11.8	May 31	do	19.2
Sept. 8	do	13.1	July 10	do	10.8
Oct. 18	F. H. Olmsted	15.3	Sept. 3	W. B. Clapp	5.3
Nov. 9	do	15.2	Nov. 5	S. G. Bennett	12.3
Dec. 8	do	12.6	1903.		
1899.			Apr. 1	W. B. Clapp	1,280
Jan. 12	S. G. Bennett	10.8	24	Clapp and Clausen	39
Feb. 18	do	10.4	May 16	W. B. Clapp	68
Mar. 23	do	15.6	June 9	do	46
May 6	do	14.6	July 1	do	29
31	do	11.6	Sept. 1	do	22
June 15	do	6.8			
July 15	do	7.4	1904.		
27	do	4.3	Sept. 21	W. B. Clapp	15.2
Aug. 24	do	7.2	Nov. 11	E. C. LaRue	14.1
1900.			1905.		
Apr. 14	S. G. Bennett	10.8	Sept. 23		20
May 5	do	47			
July 13	do	8.8			
Oct. 2	W. W. Cockins, jr	8.6			

NOTE.—Measurements include the total flow at this point.

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Daily discharge, in second-feet, of Mill Creek in canyon at headworks of Crafton canal, Calif., for 1897–1902.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1897.				1897.				1897.			
1	.....	21	22	11	.....	19	18	21	.....	24	20
2	.....	23	22	12	24	20	18	22	.....	22	27
3	.....	24	22	13	24	20	18	23	.....	21	19
4	.....	24	21	14	.....	20	18	24	.....	21	16
5	.....	24	20	15	.....	20	18	25	.....	22	19
6	.....	21	20	16	.....	19	19	26	28	21	19
7	.....	22	19	17	.....	19	16	27	22	21	18
8	.....	22	19	18	.....	24	17	28	27	20	18
9	.....	22	18	19	.....	26	18	29	27	20	19
10	.....	19	18	20	.....	24	19	30	24	20	19
								31	24	20	.....

Day.	Oct.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1897–98.								
1	18	.....	17	26	16	11	8	9
2	18	.....	17	22	16	10	8	9
3	19	.....	17	17	16	10	8	7
4	19	.....	17	17	16	11	8	9
5	17	.....	17	16	16	11	8	8
6	21	.....	17	17	14	11	7	9
7	19	.....	17	17	12	11	7	8
8	19	.....	17	17	14	10	7	8
9	19	.....	17	17	14	10	7	8
10	18	.....	17	15	15	8	[a] 10	8
11	16	.....	16	15	14	8	10	8
12	16	.....	17	15	14	10	8	7
13	15	.....	17	15	14	10	8	8
14	15	.....	18	15	13	10	7	8
15	18	.....	18	18	13	9	7	8
16	18	.....	17	18	13	9	7	7
17	18	.....	17	18	12	9	7	8
18	18	.....	17	18	15	8	7	8
19	20	.....	17	20	12	9	7	8
20	18	.....	17	18	12	9	11	8
21	18	17	17	17	13	9	25	8
22	.....	.....	17	16	12	9	17	8
23	.....	.....	17	16	13	9	14	8
24	.....	.....	17	18	12	8	10	8
25	.....	18	16	16	12	7	10	9
26	.....	18	16	16	11	9	9	9
27	.....	17	15	18	11	7	9	9
28	.....	17	16	18	11	7	13	9
29	.....	17	19	17	10	7	13	8
30	.....	17	19	16	10	8	11	9
31	.....	17	.....	16	.....	7	11	.....

[a] Not entire flow of creek.

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Daily discharge, in second-feet, of Mill Creek in canyon at headworks of Crafton canal, Calif., for 1897–1902—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1898–99.												
1	9	10	10	11	11	11	13	12	17	5.6	7.1	5.5
2	9	10	10	11	11	11	13	11	13	6.2	6.2	5.6
3	9	10	10	11	11	11	12	11	12	6.2	5.8	5.4
4	9	10	10	11	11	11	12	11	11	6.2	6.7	5.4
5	9	10	10	11	11	11	12	11	10	4.9	7.2	5.5
6	9	10	10	12	11	11	11	11	11	6.7	6.9	5.6
7	9	10	10	11	11	11	12	12	10	6.7	6.7	5.6
8	9	10	10	10	11	11	12	12	10	6.7	6.2	5.3
9	9	10	10	11	12	11	12	12	10	6.7	6.2	5.7
10	9	10	11	.....	12	.....	12	12	8	6.2	6.2	5.3
11	9	10	11	.....	12	10	12	12	8	6.2	6.2	5.3
12	9	10	11	.....	12	10	11	12	8	6.2	6.2	4.9
13	9	10	11	.....	.....	10	11	12	8	4.8	5.6	4.9
14	9	10	11	.....	12	10	11	11	7	4.8	5.3	4.9
15	9	10	12	.....	12	10	11	12	7	5.1	6.2	5.2
16	9	10	11	.....	12	10	12	12	8	7.2	5.6	4.8
17	9	10	12	.....	.....	12	12	12	9	6.3	5.3	3.2
18	9	10	11	.....	12	13	13	11	8	4.9	6.0	3.0
19	9	10	11	.....	12	11	12	11	8	6.2	6.0	3.0
20	9	10	11	.....	12	15	11	11	8	4.9	5.3	2.8
21	9	10	11	.....	.....	14	11	11	8	5.1	5.9	2.8
22	9	10	11	.....	11	12	12	11	8	5.8	5.9	2.8
23	9	10	10	.....	11	12	11	11	7	6.2	5.2	2.8
24	8	10	10	.....	13	16	12	10	7	6.5	5.2	2.8
25	9	10	11	.....	11	16	12	10	7	5.4	5.2	2.8
26	8	10	11	.....	12	16	12	10	8	5.4	5.3	2.8
27	9	10	10	.....	12	12	12	11	8	4.8	5.8	2.9
28	9	10	11	.....	11	12	12	10	7	4.8	4.3	2.9
29	9	10	11	.....	.....	16	12	11	6	5.5	4.3	2.7
30	10	10	11	.....	.....	16	12	11	4	5.5	5.3	2.8
31	10	.....	11	.....	.....	14	.....	11	.....	5.5	2.9	.....
1899–1900.												
1	4.8	7.2	9.8	9.8	10.2	9.8	9.0	12.0	8.2	5.5	4.9	5.1
2	5.3	7.2	9.5	10.0	10.6	9.8	9.1	12.0	8.2	5.5	4.9	5.5
3	5.3	6.8	9.4	.....	10.0	9.8	10.0	12.1	7.6	5.6	5.1	5.5
4	4.3	6.8	8.8	.....	10.2	11.9	9.8	12.1	7.8	5.6	5.7	5.7
5	4.6	7.2	8.0	.....	10.6	10.2	9.2	.....	8.0	6.3	5.7	5.5
6	6.3	7.2	7.8	.....	10.6	10.2	9.3	.....	8.0	6.3	5.5	5.5
7	5.6	7.2	8.0	.....	10.6	10.2	9.8	15.5	8.0	5.1	5.5	5.0
8	4.8	7.2	5.3	.....	10.2	10.2	9.8	14.6	8.0	4.3	5.5	5.0
9	5.6	6.1	9.0	.....	10.6	10.2	9.7	16.4	8.0	4.3	5.1	5.0
10	5.2	6.1	8.8	.....	10.2	9.8	8.9	17.0	8.0	4.5	5.1	5.5
11	5.7	6.8	9.0	.....	10.2	9.8	8.9	.....	8.0	4.5	5.4	5.5
12	6.1	6.8	8.2	.....	10.2	9.6	9.3	.....	8.0	5.5	5.5	5.5
13	6.2	6.4	9.8	.....	10.0	9.6	9.3	.....	8.2	5.5	5.5	5.5
14	8.5	11.2	9.6	.....	10.0	9.8	8.9	.....	8.0	5.5	5.5	5.5
15	7.8	11.2	9.6	.....	10.0	9.8	8.9	.....	8.0	5.5	5.5	4.5
16	7.8	9.8	7.8	.....	10.0	9.8	9.8	12.0	8.2	4.5	5.5	4.5
17	7.8	9.8	14.6	.....	10.0	9.8	8.9	12.0	7.2	3.8	5.5	4.3
18	7.2	9.8	13.0	9.8	10.0	9.8	8.9	12.0	4.8	3.3	5.5	5.1
19	7.8	9.8	12.6	10.0	10.2	9.8	8.9	13.0	6.8	4.4	5.5	4.5
20	7.2	9.7	9.8	10.0	10 2	9.8	8.9	12.0	7.6	4.0	5.5	4.1
21	7.2	9.7	9.4	10.6	10.2	10.2	10.2	12.0	7.6	5.4	5.5	5.1
22	7.2	9.6	11.0	10.4	10.2	10.2	13.3	10.1	6.5	5.4	5.5	5.1
23	7.8	9.7	9.6	10.6	10.2	13.2	10.8	12.0	6.5	4.8	4.9	4.9
24	6.6	9.8	9.8	10.6	10.2	10.6	10.8	10.1	.....	5.0	5.5	5.3
25	6.6	10.4	9.8	10.6	10.2	9.8	10.2	10.1	.....	5.0	4.9	5.3
26	7.8	10.0	10.0	10.4	10.2	10.2	10.2	9.9	.....	5.0	4.9	5.3
27	7.2	9.8	10.0	10.4	9.8	10.2	10.2	9.9	.....	5.0	4.3	4.9
28	7.2	9.8	8.5	10.4	9.8	11.6	10.8	8.4	5.4	5.0	4.3	4.9
29	7.2	9.8	9.4	10.4	.....	10.2	13.0	8.6	5.4	5.0	4.3	4.9
30	7.2	9.8	9.8	10.6	.....	9.8	3.0	8.6	5.3	4.7	5.1	4.9
31	7.2	.....	10.0	10.2	.....	9.8	.....	8.2	.....	4.7	5.1	.....

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Daily discharge, in second-feet, of Mill Creek in canyon at headworks of Crafton canal, Calif., for 1897–1902—Continued.

Day.	Oct.	Nov.	June.	July.	Aug.	Sept.	Day.	Oct.	Nov.	June.	July.	Aug.	Sept.
1900–1901.							1900–1901.						
1	4.9	5.1	.....	19.09	50.00	16.00	16	5.4	8.5	.....	15.04	(a)	13.18
2	5.1	5.1	.....	19.12	30.00	16.00	17	5.2	7.5	.....	15.04	.....	13.18
3	5.1	5.1	.....	19.09	20.00	16.00	18	5.0	.....	.....	15.04	.....	12.30
4	5.3	5.1	.....	19.09	20.00	16.58	19	5.0	.....	20.08	14.40	.....	12.30
5	4.9	5.1	.....	18.00	20.00	16.58	20	5.0	.....	20.08	13.94	.....	12.30
6	5.1	5.1	.....	16.96	19.10	16.58	21	4.1	.....	21.00	14.40	.....	11.42
7	5.1	5.1	.....	16.96	19.10	16.58	22	4.6	.....	20.90	14.40	.....	11.42
8	4.1	5.1	.....	16.80	18.00	16.00	23	5.2	.....	20.40	13.94	.....	12.30
9	3.8	5.1	.....	16.80	16.08	16.60	24	5.2	.....	20.08	13.94	16.00	12.30
10	3.9	5.1	.....	16.00	16.08	14.04	25	5.2	.....	20.08	14.40	16.00	14.58
11	4.9	5.1	.....	16.00	16.08	14.00	26	5.2	.....	20.00	14.40	15.04	13.18
12	4.9	5.1	.....	16.09	18.24	14.00	27	5.2	.....	19.80	16.96	15.04	13.18
13	5.6	5.1	.....	16.00	16.96	14.00	28	5.2	.....	19.80	15.04	15.04	13.18
14	5.8	5.1	.....	15.04	16.96	14.00	29	5.2	.....	19.50	15.04	16.00	13.18
15	5.8	5.1	.....	15.04	16.96	13.18	30	5.3	.....	19.40	15.04	16.00	13.18
							31	5.1	.....	.....	15.04	16.00	.....

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1901.				1901.				1901.			
1	13.18	12.30	11.70	11	12.64	12.30	12.10	21	12.30	12.30	12.10
2	13.18	12.30	10.26	12	12.64	12.30	12.10	22	12.30	12.30	12.10
3	13.18	12.30	11.10	13	12.30	12.30	12.10	23	12.30	12.30	12.10
4	13.18	12.80	12.28	14	12.30	12.30	12.10	24	12.30	12.30	12.10
5	13.18	12.30	12.28	15	12.30	12.30	12.10	25	12.30	12.30	12.10
6	13.18	12.30	12.10	16	12.30	12.30	12.10	26	12.30	12.30	12.10
7	13.18	12.30	12.10	17	12.30	12.30	12.10	26	12.30	12.30	12.10
8	13.18	12.30	12.10	18	12.30	12.30	12.10	28	12.30	12.30	12.10
9	12.80	12.30	12.10	19	12.30	12.30	12.10	29	12.30	12.30	12.10
10	12.64	12.30	12.10	20	12.30	12.30	12.10	30	12.30	11.60	12.10
								31	12.30	.....	12.10

Day.	Jan.	Feb.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1902.										
1	12.14	.....	.....	19.48	13.60	9.36	8.96	8.16	9.36	16.0
2	12.14	.....	.....	19.48	13.60	9.36	8.96	8.16	9.76	14.4
3	12.14	.....	.....	17.78	13.60	9.36	8.96	8.16	9.76	13.8
4	12.14	.....	.....	17.78	13.60	9.36	8.96	8.16	9.76	13.8
5	12.14	.....	21.02	18.0	13.60	9.36	8.96	8.16	9.76	13.8
6	12.14	.....	22.0	17.96	13.60	9.36	8.96	8.80	9.76	12.74
7	12.14	.....	22.0	17.92	13.60	9.36	8.96	8.80	9.76	12.74
8	12.14	.....	22.0	16.48	13.18	9.36	.....	8.80	9.76	12.74
9	12.14	.....	22.0	17.54	13.18	9.76	9.96	8.16	9.76	12.74
10	12.7	.....	24.6	17.54	12.30	9.76	9.96	8.16	14.14	12.74
11	12.74	.....	24.6	15.52	12.30	9.36	9.76	8.92	14.14	.....
12	12.78	.....	24.6	14.56	12.30	9.36	9.76	8.96	11.86	.....
13	12.74	.....	24.26	15.52	12.30	9.36	9.76	8.96	11.86	.....
14	12.74	.....	24.26	15.52	11.86	9.36	10.40	8.96	11.12	.....
15	12.74	.....	24.26	15.04	11.86	9.36	10.40	8.16	11.22	.....
16	12.74	.....	24.0	15.04	11.86	9.36	9.82	8.16	11.22	.....
17	12.74	.....	24.0	14.14	10.80	7.96	10.40	8.16	11.22	.....
18	12.74	11.42	22.6	14.14	11.0	9.36	10.58	8.16	11.22	.....
19	12.74	11.42	22.18	14.14	11.0	9.36	10.58	8.16	16.80	.....
20	12.74	11.42	22.18	14.14	10.38	9.36	10.58	8.36	13.18	.....
21	12.74	11.42	23.18	14.4	9.96	9.36	10.0	8.36	11.12	.....
22	.....	12.3	21.02	13.60	10.39	6.80	9.76	8.96	12.74	.....
23	.....	12.3	21.02	13.60	10.16	8.80	9.76	9.76	12.74	.....
24	.....	.....	21.02	13.60	10.16	8.80	10.40	8.96	.....	.....
25	.....	.....	21.02	13.60	11.86	8.80	10.40	8.96	.....	.....
26	.....	.....	19.48	13.60	10.8	8.80	9.76	8.96	16.0	.....
27	.....	.....	19.48	14.14	10.16	8.80	9.0	8.96	16.0	.....
28	.....	.....	18.96	14.14	10.16	8.80	9.0	8.96	16.0	.....
29	.....	.....	18.96	14.14	10.58	8.80	8.0	8.96	16.0	.....
30	.....	.....	20.0	14.14	10.16	8.80	8.0	8.96	16.0	.....
31	.....	.....	20.0	.....	9.48	8.80	.....	8.96	.....	.....

a On Aug. 16 a cloudburst in Mill Creek canyon and Crafton Hills filled zanja and supply canal with sand.

NOTE.—No record Jan. 22 to Feb. 17 and Feb. 24–28, 1902, Nov. 24–25, 1903, and after Dec. 10, 1903.

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Daily discharge, in second-feet, of water pumped from Mill Creek at Crafton headworks, Calif., for 1900.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
2	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
3	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
4	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
5	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
6	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
7	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
8	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
9	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
10	.....	1.7	.....	2.2	3.3	2.9	2.9	2.8	2.9
11	.....	1.7	2.2	2.2	3.3	2.9	2.8	2.8	2.9
12	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
13	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
14	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
15	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
16	.....	1.7	2.2	2.2	3.3	2.9	2.8	2.8	2.9
17	.....	1.7	2.2	2.2	3.2	2.9	2.9	2.8	2.9
18	.....	1.7	2.2	2.2	3.2	2.9	2.9	2.8	.....
19	.....	1.7	2.2	2.2	3.2	2.9	2.9	2.8	.....
20	.....	1.7	.....	2.2	3.2	2.9	2.9	2.8	.....
21	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
22	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
23	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
24	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
25	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
26	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
27	.....	.....	2.2	3.7	3.2	2.9	2.9	2.8	.....
28	1.0	.....	2.2	3.7	3.2	2.9	2.2	2.8	.....
29	1.5	.....	2.2	3.7	3.2	2.9	2.9	2.8	.....
30	1.7	.....	2.2	3.7	3.3	2.9	2.9	2.9	.....
31	1.7	.....	2.2	.....	3.3	2.9	.....	2.9	.....

NOTE.—No record from Nov. 17 to Dec. 31.

Monthly discharge of Mill Creek canals in canyon at Crafton headworks, Calif., for 1895–96 and 1899–1902.

[Drainage area, 47 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1895.						
August	27.6	24.0	24.5	0.52	0.60	1,505
September	26.5	19.5	20.0	.47	.52	1,310
1895–96.						
October	24.5	17.0	19.6	.42	.48	1,205
May	21.4	9.4	13.4	.28	.33	825
June	16	5.1	10.3	.22	.25	615
July	16	6.1	11.5	.24	.28	709
August	13.2	8.7	11.6	.25	.28	716
September	15	7.4	11.5	.24	.27	687
1896.						
October	13.1	9.0	10.5	.22	.26	637
1899.						
February	13	11	11.6	.25	.26	644
March	16	10	12.2	.26	.30	750
April	13	11	11.8	.25	.28	702
May	12	10	11.2	.23	.26	689
June	17	4	8.7	.19	.21	518
July	7.2	4.8	5.8	.12	.14	357
August	7.2	2.9	5.8	.12	.14	357
September	5.7	2.0	4.1	.09	.10	244
The period	.....	.....	.....	.....	.....	4,260

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Monthly discharge of Mill Creek canals in canyon at Crafton headworks, Calif., for 1895–96 and 1899–1902—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1899–1900.						
October	8.5	4.3	6.5	0.14	0.16	400
November	11.2	6.1	8.6	.18	.20	512
December	14.6	5.3	9.5	.20	.23	584
January (16 days)	10.6	9.8	10	.22	.13	317
February	10.6	9.8	10	.22	.23	555
March	13.2	9.6	10	.22	.25	615
April	13.3	8.9	10	.22	.25	595
May	17.0	8.2	12	.27	.31	738
June	8.2	5.3	7	.16	.18	417
July	6.3	3.3	5	.11	.13	307
August	5.7	4.3	5	.11	.13	307
September	5.7	4.3	5	.11	.12	298
The period	17.0	3.3	8.22	.175	2.32	5,640
1900–1901.						
October	5.8	3.8	5	.11	.13	307
November 1–17	8.5	5.1	5	.11	.07	169
July	19.12	13.94	15.86	.34	.39	975
August [a]	.....	.....	19.07	.41	.35	867
September	16.58	11.42	14.04	.30	.33	833
1901.						
October	13.18	12.30	12.58	.27	.31	774
November	12.30	11.60	12.28	.26	.29	732
December	12.28	10.26	12.00	.26	.30	738
1902.						
January 1–21	12.78	12.14	12.5	.....	.....	521
February 18–23	12.3	11.42	11.7	.....	.....	139
May 5–31	24.6	18.96	22.0	.....	.....	1,180
June	19.48	13.60	15.6	.....	.....	928
July	13.60	9.48	11.7	.....	.....	719
August	9.76	6.8	9.10	.....	.....	560
September 1–7, 9–30	10.58	8.0	9.61	.....	.....	553
1902–3.						
October	9.76	8.16	8.62	.....	.....	530
November 1–23, 26–30	16.80	9.36	12.2	.....	.....	678
December 1–10	16.0	12.74	13.6	.....	.....	270

[a] Partial month.

MILL CREEK AT FOREST HOME,[1] CALIF.

LOCATION.—In NW. ¼ NE. ¼ sec. 13, T. 1 S., R. 1 W., at Forest Home, San Bernardino County, 2½ miles below Falls Creek, 4 miles above Mountain Home Creek, and 14 miles east of Redlands.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 4,900 feet above sea level.

RECORDS AVAILABLE.—September 22, 1903, to September 30, 1918.

DISCHARGE.—Obtained by combining results of current-meter measurements in power canal with flow over diverting dam. The flow over the diverting dam is only roughly determined.

EXTREMES OF DISCHARGE.—1903-1918: Maximum mean daily discharge reported, 2,200 second-feet March 7, 1918 (no record for flood of January, 1916); minimum mean daily discharge reported, 7.0 second-feet November 19 and 20, 1904.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Daily discharge is mean of two observations recorded each day at 6 a. m. and 6 p. m. Records good for periods in which total flow of creek is diverted into power canal; subject to error for higher stages.

COOPERATION.—Record furnished by Southern California Edison Co., through H. W. Dennis, constructing engineer.

[1] "Akers Camp" on San Gorgonio topographic map, U. S. Geological Survey.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918.

Day.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.													
1	.....	19	12	11	10	9.2	11	14	17	15	11	11	9.8
2	.....	17	12	11	10	9.2	10	14	17	14	11	11	9.6
3	.....	16	12	11	10	9.2	10	(a)	16	14	11	11	9.6
4	.....	16	12	11	10	8.9	9.8	18	16	14	11	12	9.6
5	.....	16	12	11	9.1	9.2	9.5	18	16	14	11	11	9.6
6	.....	15	12	11	9.7	10	9.6	21	16	14	10	(b)	9.7
7	.....	14	12	11	9.7	9.2	9.5	20	16	14	10	11	9.4
8	.....	15	11	11	9.6	9.0	9.5	21	16	14	10	10	9.4
9	.....	15	12	11	9.6	9.1	9.4	20	16	13	10	10	9.6
10	.....	14	12	11	9.6	9.2	11	20	16	13	10	10	9.7
11	.....	14	12	11	9.6	9.1	11	20	16	13	10	10	9.0
12	.....	14	12	11	9.4	9.1	10	20	16	13	9.9	11	11
13	.....	14	11	11	9.4	9.1	10	20	16	13	9.9	11	9.2
14	.....	14	11	11	9.4	9.1	11	20	16	13	9.8	11	8.8
15	.....	14	11	11	9.4	9.0	11	18	16	13	9.7	11	8.7
16	.....	13	11	11	9.4	14	11	17	16	12	9.7	12	8.8
17	.....	13	11	10	9.4	11	10	16	15	12	9.6	10	8.7
18	.....	13	11	10	9.5	10	10	16	15	12	9.6	10	8.7
19	.....	13	11	10	9.3	9.6	10	18	15	14	9.5	10	8.7
20	.....	13	11	10	9.0	9.2	26	18	15	11	9.4	10	8.7
21	.....	13	11	10	9.4	9.2	11	18	15	12	9.4	10	8.7
22	.....	13	11	10	9.5	9.3	11	17	15	12	9.4	11	8.7
23	13	12	11	10	9.4	9.2	50	26	15	12	9.3	10	8.7
24	13	12	11	10	9.5	9.1	13	16	16	12	9.0	10	8.6
25	18	12	11	10	9.4	9.2	12	17	16	12	10	11	8.6
26	14	12	11	10	9.4	9.3	15	17	16	12	12	11	8.6
27	17	12	11	10	9.4	9.2	17	17	15	11	12	11	8.5
28	17	12	11	10	9.4	14	18	16	15	11	11	10	8.5
29	17	12	11	10	9.4	13	48	15	15	11	11	10	8.5
30	16	12	11	10	9.4	.....	19	16	15	11	11	10	8.4
31	.....	12	.....	10	9.3	.....	14	.....	15	.....	11	9.8	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.												
1	8.3	8.2	7.8	7.5	8.2	18	24	36	54	37	24	20
2	8.2	8.2	7.8	7.4	12	20	29	38	54	38	24	19
3	8.2	8.3	7.8	7.4	14	18	24	47	48	36	24	19
4	8.4	8.3	7.6	7.4	13	19	24	40	48	36	24	19
5	8.4	8.2	7.6	7.4	12	18	25	45	48	35	24	19
6	8.4	8.2	7.6	7.6	11	18	22	50	48	34	24	19
7	8.4	8.2	7.6	7.4	10	18	31	40	48	34	22	19
8	9.5	8.2	7.6	7.4	9.9	19	31	48	49	33	20	18
9	8.9	8.2	7.6	14	11	19	29	45	49	28	20	19
10	8.7	8.2	7.6	9.8	10	19	31	42	49	26	22	18
11	8.6	8.2	7.6	8.3	9.9	21	31	40	49	30	22	18
12	8.4	8.2	7.6	7.6	9.8	(b)	31	40	49	30	21	19
13	8.4	8.1	7.6	7.5	9.6	66	30	41	49	30	21	19
14	8.4	8.1	7.6	7.4	9.6	26	31	50	49	30	21	19
15	8.3	(a)	7.6	7.4	14	30	31	(b)	49	30	21	18
16	8.4	8.0	7.5	8.3	(b)	27	27	(b)	49	30	20	18
17	8.4	8.0	7.5	7.6	16	23	26	(b)	39	29	25	18
18	8.4	8.0	7.5	7.4	16	22	31	74	39	29	20	18
19	8.4	7.0	7.5	7.4	16	23	31	73	39	28	20	17
20	8.3	7.0	7.5	7.5	15	26	31	74	39	28	25	18
21	8.3	8.0	7.5	16	15	23	31	59	40	29	20	17
22	8.2	7.9	7.6	8.3	14	23	31	58	41	26	20	17
23	8.2	7.9	7.5	8.1	14	24	31	69	39	26	20	18
24	8.2	7.8	7.5	8.1	15	24	31	78	39	26	19	14
25	8.2	7.7	7.5	8.0	17	24	31	58	39	26	19	17
26	8.2	7.9	7.4	8.0	16	24	31	58	39	26	19	17
27	8.2	7.9	7.4	8.0	16	26	31	52	39	26	21	17
28	8.1	7.8	7.4	8.0	18	24	31	53	39	26	22	17
29	8.2	7.8	7.4	8.0	.....	24	31	56	39	26	21	18
30	8.2	7.8	7.4	8.1	.....	24	31	54	39	25	20	17
31	8.2	.....	7.4	8.1	.....	24	.....	54	.....	24	20	.....

a No record reported. b Discharge over 100 second-feet at time of one daily observation.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1905–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	16	15	25	14	13	14	40	40	60	29	29	28
2	16	15	15	14	13	15	42	40	60	32	29	28
3	16	15	15	14	13	15	48	40	60	32	28	28
4	16	15	15	14	13	18	42	40	60	32	28	28
5	16	15	15	13	14	15	50	40	60	32	28	28
6	16	15	15	13	14	16	50	40	60	30	28	28
7	16	21	15	13	13	16	50	45	50	30	28	28
8	16	20	15	13	18	16	50	45	50	30	28	28
9	16	18	15	13	13	15	55	45	50	30	28	28
10	17	16	15	13	14	15	60	45	42	30	28	28
11	16	16	15	13	14	15	55	45	42	30	28	28
12	16	15	15	13	14	.....	50	40	40	30	28	28
13	16	15	15	13	14	60	50	40	40	35	28	28
14	16	15	15	14	14	36	50	40	40	30	28	28
15	16	16	14	14	16	32	50	40	40	30	28	28
16	16	15	15	13	20	(a)	55	40	40	30	28	28
17	16	16	15	13	15	(a)	55	40	40	26	28	28
18	16	15	15	13	15	40	55	40	40	30	28	28
19	16	15	14	24	14	37	55	45	38	30	28	28
20	16	16	14	16	15	34	55	45	37	35	28	28
21	15	15	17	14	16	34	55	45	37	30	28	27
22	15	15	14	14	15	31	55	45	36	30	28	25
23	16	15	14	13	15	30	55	45	35	30	28	24
24	15	15	14	17	14	.....	55	40	29	30	28	24
25	15	15	14	14	14	.....	55	40	35	30	28	24
26	15	15	14	14	14	.....	55	45	35	30	28	24
27	14	19	14	14	14	(a)	50	45	37	30	28	24
28	15	16	14	14	15	50	40	.....	35	30	28	24
29	14	16	14	13	.....	45	40	(a)	34	30	28	24
30	15	15	14	13	.....	38	40	65	32	30	28	24
31	15	.....	14	13	.....	30	.....	55	.....	30	28	.....
1906–7.												
1	23	20	16	17	22	30	50	80	50	36	30	30
2	23	20	18	17	22	30	50	80	48	38	30	30
3	23	20	19	16	22	30	50	80	45	36	30	30
4	23	20	18	19	24	40	50	80	45	36	30	30
5	23	20	18	27	25	45	50	80	45	36	30	30
6	(b)	24	18	23	25	30	55	70	45	36	30	30
7	(b)	20	17	17	25	30	60	(a)	45	35	30	30
8	(b)	18	17	18	28	30	60	70	45	34	30	30
9	23	19	18	20	30	30	65	65	45	34	30	28
10	22	19	17	22	30	30	70	70	45	34	30	25
11	22	19	17	22	30	30	70	69	45	34	30	26
12	22	19	42	20	30	30	70	70	48	34	30	25
13	22	18	19	21	30	30	70	70	48	34	30	48
14	22	18	18	21	30	30	70	70	48	34	30	25
15	21	17	18	21	30	30	70	70	42	34	30	25
16	21	18	18	21	30	30	70	70	40	34	30	28
17	21	18	17	21	43	30	70	70	50	34	30	27
18	21	18	17	20	30	30	70	65	40	34	30	27
19	21	17	17	17	30	30	(a)	58	40	34	30	28
20	21	16	17	25	30	(a)	80	52	40	34	30	22
21	20	16	17	27	30	(a)	80	50	39	34	30	27
22	20	16	17	22	50	(a)	80	50	54	34	30	27
23	20	16	17	22	30	60	80	50	38	34	30	27
24	20	16	17	22	30	60	80	50	38	30	30	27
25	20	16	24	22	30	60	80	45	39	30	30	22
26	20	16	23	22	30	60	80	50	38	30	30	27
27	20	16	26	22	30	60	80	50	40	30	30	22
28	20	16	(b)	22	30	60	80	50	40	30	30	22
29	20	16	22	22	.....	60	80	50	40	30	30	22
30	20	16	20	24	.....	50	80	50	40	30	30	22
31	20	.....	20	23	.....	50	.....	50	.....	30	30	.....

a Discharge over 100 second-feet at time of one daily observation. b No record reported.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	22	22	18	17	15	20	32	40	40	22	28	14
2	22	22	18	17	16	18	32	40	40	21	16	14
3	22	22	18	17	19	17	32	40	40	21	16	16
4	22	21	18	17	18	16	32	40	38	21	17	15
5	22	21	18	17	16	17	32	40	36	20	18	14
6	22	21	18	16	16	29	32	40	40	19	28	14
7	22	22	18	16	15	16	32	40	40	18	20	16
8	22	21	18	16	15	16	32	40	38	20	16	14
9	22	21	18	16	15	17	32	40	36	20	55	(a)
10	22	21	18	16	15	19	32	40	36	20	29	18
11	22	20	18	15	15	20	32	40	34	19	16	14
12	22	20	18	14	15	21	33	40	32	19	16	14
13	22	20	18	14	15	22	34	40	32	19	16	14
14	22	20	18	16	16	26	34	40	31	19	16	15
15	22	20	18	15	16	26	34	40	30	19	15	14
16	22	20	18	15	17	29	34	40	30	28	16	13
17	22	20	18	14	16	32	34	40	30	21	16	13
18	22	19	18	14	17	32	34	40	29	20	19	13
19	22	19	18	14	16	32	36	40	28	16	17	12
20	22	19	18	24	16	32	34	40	28	20	14	12
21	22	19	18	14	16	32	34	40	28	19	14	12
22	23	19	18	14	16	32	34	40	27	19	14	12
23	45	19	18	18	16	32	34	40	26	30	14	12
24	22	19	18	20	16	32	37	40	24	20	14	30
25	22	18	17	18	14	32	40	40	22	19	14	14
26	22	18	17	17	20	32	40	40	22	19	15	12
27	22	18	17	15	22	31	40	40	22	19	15	12
28	22	18	17	16	22	32	40	40	22	19	15	11
29	22	18	17	16	21	32	40	40	22	18	15	12
30	22	18	17	16	.....	32	40	40	22	18	15	13
31	22	.....	17	16	.....	32	.....	40	.....	18	14	.....
1908–9.												
1	12	12	11	12	15	23	29	42	40	29	24	22
2	12	12	12	12	16	24	30	45	40	29	24	20
3	12	12	15	11	18	24	43	48	39	29	24	20
4	12	12	13	11	18	24	32	50	39	28	24	20
5	13	12	12	11	17	23	30	50	39	28	24	21
6	12	12	12	11	18	27	29	50	38	28	24	20
7	12	12	12	11	25	28	28	50	38	28	24	20
8	12	12	11	11	18	28	28	50	38	28	23	25
9	12	12	11	20	29	28	29	50	38	28	23	20
10	12	12	11	11	18	28	29	50	38	28	22	20
11	12	11	11	12	24	28	31	50	34	28	22	20
12	12	11	11	14	25	28	32	47	34	27	22	20
13	12	11	11	38	22	28	32	47	34	27	22	20
14	12	11	11	45	22	28	35	47	34	27	24	20
15	12	11	11	17	20	28	36	44	34	26	(a)	20
16	12	12	11	13	21	28	36	44	34	26	(a)	20
17	12	11	11	12	24	28	36	44	33	26	(a)	19
18	12	11	11	12	24	28	36	44	33	26	29	19
19	12	11	11	12	24	28	36	44	32	26	26	19
20	12	11	11	12	24	28	36	44	32	25	22	19
21	13	11	12	(a)	24	28	36	44	32	25	23	19
22	17	11	12	.....	24	28	36	44	32	25	23	19
23	20	16	12	45	24	28	36	44	32	32	22	18
24	18	11	12	12	24	28	36	44	31	28	22	18
25	13	11	12	14	24	28	38	44	31	28	22	18
26	19	11	12	14	24	28	39	44	30	25	22	18
27	14	11	12	14	24	28	40	44	30	25	23	18
28	12	11	12	14	24	28	40	43	30	25	22	18
29	12	11	12	14	.....	28	40	42	29	25	22	18
30	12	11	12	14	.....	28	42	42	29	25	22	18
31	12	.....	12	15	.....	28	.....	41	.....	25	22	.....

a Discharge over 100 second-feet at time of one daily observation.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	19	16	16	.....	50	50	60	60	44	36	33	25
2	19	16	16	.....	50	50	60	59	45	36	33	25
3	18	16	15	(a)	51	50	60	58	45	35	33	25
4	14	16	15	55	52	50	60	59	45	35	32	25
5	18	16	15	50	52	50	60	60	45	33	32	25
6	18	16	24	54	52	50	60	60	44	33	30	24
7	18	16	16	56	52	50	60	58	44	33	30	24
8	18	16	17	56	52	50	60	58	42	33	30	23
9	18	18	.....	53	52	50	60	57	42	32	29	24
10	18	16	34	54	52	50	56	57	42	32	29	24
11	18	16	24	54	52	50	56	56	42	32	29	24
12	17	16	16	54	52	50	60	56	42	32	29	24
13	17	16	16	54	52	50	60	55	42	32	29	24
14	17	17	16	55	52	50	57	55	42	33	27	24
15	17	16	16	55	52	50	54	55	42	36	27	24
16	17	18	16	52	52	50	53	55	42	40	28	23
17	18	17	15	54	52	50	53	55	41	36	27	23
18	18	16	15	53	52	50	53	55	41	36	27	23
19	17	16	15	52	52	50	53	54	40	35	27	23
20	17	16	15	46	52	50	53	54	39	43	28	22
21	17	16	15	46	53	50	54	52	39	41	28	22
22	17	16	16	46	52	50	55	51	38	40	27	22
23	17	16	16	48	52	50	56	51	38	38	27	22
24	17	16	16	48	52	50	56	48	38	37	26	24
25	16	16	16	48	52	50	56	49	37	37	27	22
26	16	18	16	49	52	50	56	49	37	36	26	22
27	16	18	16	50	52	50	56	48	37	36	26	22
28	16	16	16	50	52	50	56	48	37	35	25	22
29	16	16	16	50	.....	50	56	48	37	35	25	22
30	16	16	18	50	.....	60	60	46	36	36	25	22
31	16	.....	(a)	50	.....	60	.....	44	.....	35	24	.....
1910–11.												
1	22	22	22	20	70	50	.....	.....	81	62	40	30
2	22	22	22	19	54	49	.....	.....	(a)	60	40	30
3	22	25	22	20	46	59	.....	.....	81	58	40	29
4	22	24	22	20	75	74	.....	.....	81	56	39	30
5	22	23	21	20	55	61	.....	.....	81	55	38	30
6	22	23	21	20	50	52	.....	.....	81	53	37	30
7	22	22	21	20	50	66	.....	.....	81	52	37	30
8	22	23	21	20	40	(a)	.....	.....	80	50	36	30
9	22	22	21	25	42	.....	.....	.....	80	50	36	30
10	22	22	21	.....	43	.....	.....	.....	80	50	35	30
11	23	22	21	31	45	.....	.....	.....	80	48	37	29
12	23	22	21	22	46	.....	.....	.....	80	48	36	29
13	23	23	21	21	44	.....	.....	.....	80	47	35	29
14	26	25	21	20	48	.....	.....	.....	78	44	34	29
15	27	25	21	48	45	.....	.....	.....	77	46	34	30
16	27	25	21	27	45	.....	.....	.....	77	52	34	28
17	26	23	22	23	45	.....	.....	.....	77	55	34	28
18	24	23	21	22	43	.....	.....	.....	77	56	34	27
19	23	23	22	20	42	.....	.....	.....	76	53	33	27
20	22	23	23	20	41	.....	.....	.....	76	50	33	27
21	23	22	23	20	42	.....	.....	.....	74	52	33	27
22	23	22	22	20	40	.....	.....	.....	72	52	33	27
23	22	22	22	20	(a)	.....	.....	.....	70	52	32	26
24	22	22	22	29	42	.....	.....	.....	68	49	32	26
25	22	22	21	37	42	.....	.....	.....	66	48	32	26
26	22	23	21	27	42	.....	.....	97	65	48	32	26
27	22	23	21	25	45	.....	.....	95	64	46	32	27
28	22	22	21	27	48	.....	.....	92	64	46	32	32
29	22	22	21	.....	.....	.....	.....	90	62	45	32	37
30	22	22	21	80	.....	.....	.....	88	62	44	31	45
31	22	.....	20	(a)	.....	.....	.....	86	.....	42	31	.....

a Discharge over 100 second-feet at time of one daily observation.

NOTE.—For days on which no record is given, and not otherwise noted, the discharge was over 100 second-feet.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	37	28	25	23	22	26	26	40	46	31	26	20
2	35	27	24	23	21	21	28	40	44	31	25	20
3	34	27	25	23	21	20	29	40	46	31	24	20
4	34	26	24	23	21	25	28	38	45	31	24	20
5	33	26	24	23	21	23	27	39	45	31	24	20
6	33	26	25	22	21	46	28	39	45	30	23	20
7	32	26	26	22	21	37	60	40	43	30	23	20
8	32	26	25	23	21	29	32	40	42	30	23	20
9	32	26	25	22	21	44	34	40	42	29	22	20
10	31	26	24	22	21	64	31	39	41	28	22	19
11	31	27	24	23	21	39	31	39	40	29	22	18
12	30	28	24	22	21	46	30	40	40	29	22	18
13	29	27	24	22	20	34	30	40	45	29	22	18
14	29	26	24	22	20	36	32	40	37	28	21	18
15	30	26	24	22	20	32	34	43	35	30	21	18
16	29	26	24	22	20	33	34	42	34	29	21	18
17	28	25	26	22	20	29	35	43	34	29	21	18
18	28	25	24	26	20	28	36	43	34	31	21	18
19	27	25	24	22	19	28	36	46	34	29	21	18
20	27	25	24	22	19	31	36	46	34	27	21	17
21	26	25	24	21	19	30	35	47	33	27	21	17
22	27	25	24	21	19	27	36	44	34	27	20	16
23	27	25	23	21	19	25	38	47	33	25	20	17
24	27	26	23	22	19	27	36	44	33	26	20	17
25	27	25	23	21	19	27	37	45	33	25	19	16
26	28	25	23	21	19	27	40	45	32	25	19	16
27	32	25	22	23	19	25	37	46	31	25	19	16
28	30	29	23	22	19	25	38	44	31	25	20	16
29	29	24	24	22	19	27	38	46	32	28	19	16
30	29	25	23	21	.....	26	39	46	32	26	20	16
31	28	.....	23	21	.....	25	.....	45	.....	26	19	.....

NOTE.—Discharge estimated Sept. 28–30.

1912–13.												
1	16	19	18	16	16	18	28	29	21	15	12	11
2	29	19	18	16	16	19	29	28	21	14	12	10
3	38	20	18	16	16	19	26	30	20	14	12	10
4	26	20	18	16	16	19	27	28	20	14	12	10
5	25	19	18	16	16	20	27	27	20	14	12	11
6	24	19	18	16	16	20	26	28	22	14	14	10
7	24	19	18	14	17	20	27	28	21	13	15	10
8	24	19	18	15	21	20	26	29	20	13	13	10
9	24	19	17	16	18	20	28	28	19	13	13	10
10	23	21	17	16	17	20	28	29	19	13	12	10
11	22	22	17	16	17	20	28	28	18	13	12	10
12	20	20	17	16	17	20	28	28	18	15	12	11
13	23	20	17	16	16	20	28	28	18	13	12	11
14	21	19	17	16	16	20	28	23	18	13	12	10
15	20	19	17	17	16	19	27	24	17	13	12	10
16	20	19	17	17	16	19	26	21	17	12	11	10
17	20	19	17	17	16	20	26	24	17	12	11	10
18	20	19	17	17	16	21	27	24	16	13	11	10
19	20	18	16	16	16	20	26	24	16	13	11	10
20	21	18	16	16	16	20	26	24	16	14	11	10
21	21	18	16	16	16	21	26	24	16	15	11	10
22	21	18	16	16	16	21	27	24	16	14	.....	10
23	20	18	16	16	16	21	28	24	16	14	14	10
24	20	18	16	16	22	21	28	24	15	13	11	10
25	19	17	16	16	21	21	28	23	16	13	11	10
26	19	18	16	16	20	22	28	23	16	13	15	10
27	20	18	16	16	19	22	28	23	16	13	14	10
28	20	18	16	16	19	23	28	23	15	13	12	10
29	19	18	16	16	.....	24	29	23	15	12	13	10
30	19	20	16	16	.....	28	29	24	15	12	22	10
31	19	.....	16	16	.....	29	.....	22	.....	12	13	.....

NOTE.—Discharge is mean of two observations daily except for Jan. 18, 27, and July 21, 1913, when observations were made only in the morning. A cloudburst Aug. 22, 1913, piled débris on weir; no observations.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	10	9.6	9.5	10.5	22	46	45	44	58	36	28	22
2	10	11	9.4	9.6	22	48	45	44	58	36	28	22
3	10	10	9.4	9.6	22	50	45	54	58	37	28	22
4	10	9.6	9.4	9.4	22	50	45	55	55	37	27	22
5	10	9.6	9.4	9.4	22	50	46	55	52	37	28	21
6	10	9.6	9.4	9.4	21	52	46	55	52	35	27	21
7	10	9.5	9.4	9.3	21	55	45	52	50	35	27	21
8	10	9.5	9.4	9.3	21	55	45	52	50	34	27	21
9	10	9.5	9.2	9.2	21	55	45	52	50	34	27	21
10	10	9.2	9.2	9.2	21	55	45	52	48	34	27	21
11	10	9.5	9.2	9.2	21	55	46	52	45	33	27	20
12	10	9.5	9.2	9.2	22	55	48	55	45	33	26	20
13	10	12	9.2	9.2	23	55	48	56	44	32	26	20
14	10	9.8	9.2	9.3	23	55	48	58	42	32	26	20
15	9.9	9.7	9.2	86	23	55	49	58	40	33	26	20
16	9.8	9.6	9.2	46	23	55	52	58	40	33	26	19.6
17	9.8	9.6	9.2	18.3	23	55	52	58	40	33	26	19.5
18	9.7	9.3	9.2	17.5	26	55	52	58	40	31	26	19.4
19	9.7	11	9.2	15.3	36	52	52	58	40	31	25	19.0
20	9.7	10	9.2	12.8	368	50	52	58	40	30	25	18.8
21	9.6	10	9.1	12.9	152	50	52	58	39	30	25	18.6
22	9.6	10	10	[a]12.6	50	50	50	58	37	30	25	18.1
23	9.6	9.9	9.5	12.1	49	50	50	58	36	29	24	17.8
24	9.6	9.6	9.4	13.1	48	50	50	58	38	28	24	17.8
25	9.6	9.4	9.6	21	47	48	50	58	38	29	23	17.9
26	9.6	9.6	9.5	34	46	45	[a]50	58	37	29	22	18.0
27	9.6	9.4	9.4	24	46	45	50	58	37	29	22	18.0
28	9.6	9.4	9.4	21	46	45	50	58	37	29	22	22
29	9.6	9.4	9.4	19.6	.....	45	42	58	37	29	22	19.4
30	9.6	9.4	14	21	.....	45	44	58	36	28	22	18.5
31	9.6	.....	18	21	.....	44	.....	54	.....	28	22	.....

NOTE.—Daily discharge Dec. 16 interpolated by U. S. Geological Survey.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	18.1	16.0	14.8	14.6	19.5	30	40	54	144	87	42	28
2	18.6	15.9	14.6	14.7	21	30	41	54	150	84	39	29
3	22	15.7	14.8	14.6	20	30	43	54	150	87	38	29
4	18.8	15.5	14.7	14.7	19.2	30	48	56	144	87	40	28
5	18.6	15.4	14.7	14.6	18.2	30	72	54	154	80	40	28
6	18.4	15.4	14.5	14.6	17.8	30	52	54	144	82	38	28
7	18.1	15.4	14.5	14.5	17.9	30	52	54	144	74	38	27
8	17.8	15.4	14.6	14.3	17.9	30	50	54	124	72	38	27
9	17.5	16.0	14.4	14.3	34	30	50	57	124	70	38	27
10	17.4	19.5	14.4	14.3	131	30	52	61	130	67	37	27
11	17.3	17.3	14.9	14.2	40	30	52	72	124	64	36	27
12	16.9	16.2	14.6	14.2	30	30	54	80	124	62	34	27
13	16.8	16.1	14.7	14.2	29	30	54	84	124	58	33	27
14	16.5	15.9	14.7	14.2	26	30	54	87	109	55	36	27
15	16.5	15.8	14.6	14.4	28	31	56	90	104	54	33	27
16	16.5	15.8	14.5	13.5	30	32	50	86	113	54	32	26
17	16.4	15.7	21	13.6	32	32	54	108	104	52	32	26
18	16.3	15.5	17.6	13.9	32	33	54	129	102	52	31	25
19	16.2	15.4	15.6	13.8	31	33	54	84	106	52	30	25
20	16.3	15.4	15.0	13.8	31	36	54	84	91	51	30	25
21	17.1	15.3	14.7	14.1	30	36	56	94	102	50	29	24
22	17.0	15.3	16.2	15.1	30	37	56	104	102	50	29	22
23	16.6	19.0	15.4	14.8	30	48	54	99	97	84	29	24
24	16.2	15.1	15.1	15.1	30	39	54	99	89	54	29	24
25	16.2	14.9	14.8	17.3	30	40	56	109	92	50	29	25
26	15.8	15.0	14.9	14.7	30	40	56	114	92	50	30	26
27	16.0	15.0	14.8	14.4	30	40	56	124	87	54	30	25
28	15.8	14.8	14.8	17.7	30	40	57	124	84	55	29	24
29	15.8	14.9	14.6	33	.....	40	60	152	90	48	29	24
30	19.0	14.9	14.5	17.1	.....	40	56	144	87	45	28	24
31	16.3	.....	14.5	18.2	.....	40	.....	144	.....	44	28	24

NOTE.—Dec. 9 and 10, gage read in morning only; Feb. 11, in evening only; Aug. 10 and 18, no record; discharge interpolated by the U. S. Geological Survey.

[a] From morning readings only.

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	23	18.3	16.7	15.6	115	120	130	105	82	37	27	26
2	22	18.2	16.6	18.6	80	110	130	105	80	35	27	26
3	22	18.0	16.5	16.8	90	110	130	105	78	34	27	26
4	23	17.9	18.6	17.6	90	110	130	105	72	34	26	25
5	22	17.9	17.4	17.5	90	125	125	105	72	34	26	24
6	22	21	18.4	16.7	90	118	125	105	72	32	26	24
7	22	19.5	19.6	16.3	95	110	125	105	72	32	26	24
8	22	18.8	17.8	16.3	90	110	120	105	72	32	26	23
9	22	19.0	17.2	92	95	110	120	105	70	32	26	23
10	22	19.1	16.7	19.5	100	110	120	105	68	31	26	23
11	22	19.1	16.6	16.8	100	115	120	105	68	30	26	22
12	22	19.0	16.6	16.2	100	115	120	105	62	30	26	23
13	22	18.7	16.6	15.4	100	115	120	105	48	32	26	22
14	21	18.5	21	17 9	100	115	120	105	42	30	26	22
15	21	18.4	17.1	16.0	100	115	120	102	42	30	26	21
16	21	18.3	16.9	28	100	118	120	100	42	31	25	21
17	19.8	18.1	17.1	.....	98	118	120	98	42	30	24	23
18	19.8	17.9	16.9	.....	98	118	120	95	42	30	23	23
19	21	17.7	16.8	.....	95	118	117	100	40	30	24	23
20	19.7	17.6	16.9	.....	95	158	116	95	40	30	24	21
21	19.6	17.3	17.4	.....	116	180	116	95	40	29	24	19.8
22	19.3	17.2	17.0	.....	100	145	116	95	37	29	23	20
23	19.1	17.1	17.0	90	100	140	114	92	37	28	23	20
24	18.9	17.1	16.8	80	100	140	112	90	38	29	23	19.6
25	18.9	17.1	16.1	76	100	130	108	90	38	29	32	18.8
26	18.7	17.1	15.5	80	112	130	110	90	38	28	31	18.8
27	18.7	17.0	15.3	130	115	130	110	90	34	28	30	18.8
28	18.6	16.9	15.5	300	110	130	110	90	38	28	28	18.8
29	18.6	16.9	15.3	115	110	130	110	88	48	28	28	18.8
30	18.4	16.8	14.5	125	.....	130	105	85	38	28	26	24
31	18.4	.....	14.4	140	.....	130	.....	85	.....	28	25	.....
1916–17.												
1	24	19	16	14	14	15	22	30	28	22	20	15
2	47	19	16	14	14	15	22	34	28	22	20	15
3	25	19	16	14	14	15	23	30	27	21	24	15
4	24	19	16	14	15	16	23	30	28	21	20	14
5	24	19	16	14	15	16	23	29	27	21	18	14
6	26	19	16	14	15	16	23	29	27	21	18	14
7	25	19	16	14	15	16	23	29	28	21	18	14
8	24	19	16	14	15	16	23	30	28	20	18	14
9	24	18	15	14	15	16	22	30	27	20	18	14
10	24	18	15	14	15	16	22	29	27	20	18	14
11	22	18	14	14	15	16	22	29	27	19	19	14
12	24	18	14	14	15	16	23	29	27	19	18	14
13	23	18	14	14	15	17	22	29	27	19	19	14
14	23	18	14	14	15	17	22	29	26	19	18	14
15	23	17	14	14	15	16	22	29	26	18	18	14
16	22	17	14	14	15	16	22	29	26	17	17	13
17	23	17	14	14	15	16	23	29	26	17	17	13
18	22	17	14	14	15	15	27	29	25	17	17	13
19	22	17	14	16	15	17	28	29	25	17	17	13
20	21	17	14	15	15	18	28	29	25	16	17	14
21	20	17	14	14	15	23	29	29	25	17	17	13
22	20	17	14	14	18	23	29	29	25	19	17	13
23	20	17	14	14	17	21	29	29	24	18	17	13
24	19	17	14	14	15	22	29	29	24	18	16	13
25	20	16	14	14	29	26	30	28	23	17	16	13
26	20	16	15	14	18	27	30	28	24	29	16	13
27	19	16	15	14	16	26	30	28	23	112	16	13
28	19	16	14	14	15	25	30	28	23	26	16	13
29	19	16	14	14	.....	25	30	28	24	22	16	13
30	19	16	14	15	.....	25	30	28	23	22	15	13
31	19	.....	14	14	.....	24	.....	28	.....	21	15	.....

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Daily discharge, in second-feet, of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	12.7	11.8	11.3	10.0	9.4	10.5	37	39	35	26.5	21.2	17.0
2	12.6	11.8	11.2	10.0	9.4	10.5	37	39	38.5	25.8	21.2	15.7
3	12.8	11.6	11.0	10.0	9.3	10.7	37.5	[a] 39	35	29.5	20.6	15.9
4	12.4	11.6	11.0	10.0	9.2	10.7	37.5	39	35	23.2	20.6	22.3
5	12.4	11.6	11.0	9.9	9.2	10.7	37.5	40	34.5	30.9	20.7	15.9
6	12.4	15.0	11.0	10.0	9.1	32.5	37	40	34	22.8	20.6	16.2
7	12.2	11.6	10.8	9.6	9.8	2,200	37	40	34	23.2	20.5	15.9
8	12.2	11.9	10.8	9.6	9.2	70	37	40	34	24.8	[a] 21	16.0
9	12.2	12.2	10.8	9.6	9.0	13.3	37	40	34	29.5	21.6	16.1
10	12.2	12.1	10.8	7.5	9.1	755	37	40	34	30	21.8	15.8
11	12.2	11.9	10.8	9.3	9.1	320	37	39	34	27	20.5	15.8
12	12.2	11.9	10.8	9.6	9.1	1,750	37	38	32.5	27.5	20.4	16.1
13	12.3	11.8	10.8	9.8	9.1	120	39	38	[a] 32	27.8	20.4	15.7
14	12.2	11.9	10.8	9.4	9.1	110	40	38	31.5	27.5	[a] 20.3	15.7
15	12.2	11.8	10.8	9.4	9.1	75	40	38	[b] 31.5	26.5	20.2	15.6
16	12.5	11.7	10.8	9.6	9.1	60	40	37.5	40	26.5	20.1	15.4
17	12.3	11.6	10.8	9.8	9.0	50	40	37.5	39	26.2	20.1	15.5
18	12.2	11.6	10.8	9.8	8.0	45	[a] 40	37.5	39	26	19.8	15.5
19	12.3	11.6	10.8	9.8	8.4	48	40	37	38	25.5	19.4	15.2
20	12.1	11.5	10.6	10.0	9.7	47	40	37.7	37	24.5	18.9	14.2
21	12.1	11.5	10.4	9.1	10.7	48	40	37.5	35	24	18.3	15.5
22	12.2	11.6	10.4	11.3	27.0	46	40	37.2	35.5	24	18.1	15.9
23	11.9	11.5	10.3	9.1	12.8	45	40	36.5	35	24	18	15.2
24	11.9	11.9	10.4	9.1	11.1	41	40	36.5	33.8	24	17.6	15.6
25	11.9	11.6	10.3	10.5	10.7	41	40	36.5	33.8	24	17.9	15.6
26	11.8	11.6	10.4	10.2	10.4	42	40	36 5	32	22.6	18.2	15.2
27	11.8	11.5	10.3	9.2	10.3	42	40	36.5	30	23.1	18.6	15.6
28	11.8	11.6	10.2	9.6	10.2	40	40	36.5	29.5	22.2	18.5	15.4
29	11.8	11.3	10.2	9.6	.....	36	40	37	28.2	21.6	25.9	15.6
30	11.8	11.3	10.1	9.6	.....	37	40	36.5	27	21.5	22	15.2
31	11.8	.....	10.0	9.5	.....	37	.....	35	.....	21.2	17.8	.....

[a] Interpolated. [b] Estimated same as day before.

Monthly discharge of Mill Creek at Forest Home, Calif., for 1903–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1903.					1905–6.				
September 23–30	18	13	15.6	247	December	25	14	15.0	922
					January	24	13	14.0	861
1903–4.					February	20	13	14.5	805
October	19	12	13.7	842	March 1–15, 18–23, 28–31	60	14	27.8	1,320
November	12	11	11.4	678	April	60	40	50.4	3,000
December	11	10	10.5	646	May 1–27, 30–31	65	40	43.4	2,500
January	10	9.0	9.50	584	June	60	29	43.1	2,560
February	14	8.9	9.76	561	July	35	26	30.4	1,870
March	50	9.4	14.4	885	August	29	28	28.1	1,730
April 1–2, 4–30	26	14	18.1	1,040	September	28	24	26.8	1,590
May	17	15	15.7	965					
June	15	11	12.7	756	1906–7.				
July	12	9.0	10.2	627	October 1–5, 9–31	23	20	21.2	1,180
August 1–5, 7–31	12	9.8	10.6	631	November	24	16	17.9	1,070
September	11	8.4	9.07	540	December 1–27, 29–31	42	16	19.3	1,150
1904–5.					January	27	16	21.1	1,300
October	9.5	8.1	8.37	515	February	50	22	29.5	1,640
November 1–14, 16–30	8.2	7.0	7.98	459	March 1–19, 23–31	60	30	39.8	2,210
December	7.8	7.4	7.55	464	April 1–18, 20–30	80	50	69.0	3,970
January	14	7.4	8.08	497	May 1–6, 8–31	80	45	62.8	3,740
February 1–15, 17–28	18	8.2	13.0	696	June	54	38	43.5	2,590
March 1–11, 13–31	66	18	23.8	1,420	July	38	30	33.5	2,060
April	31	20	29.0	1,730	August	30	30	30.0	1,840
May 1–14, 18–31	78	36	52.6	2,920	September	48	22	27.0	1,610
June	54	39	44.6	2,650	1907–8.				
July	38	24	29.7	1,830	October	45	22	22.8	1,400
August	25	19	21.5	1,320	November	22	18	19.8	1,180
September	20	14	18.0	1,070	December	18	17	17.8	1,090
1905–6.					January	24	14	16.1	990
October	17	14	15.6	959	February	22	14	16.6	955
November	21	15	15.8	940	March	32	16	26.1	1,600
					April	40	32	34.6	2,060

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Monthly discharge of Mill Creek at Forest Home, Calif., for 1903–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1907–8.				
May	40	40	40.0	2,460
June	40	22	30.8	1,830
July	30	16	20.0	1,230
August	55	14	18.2	1,120
September 1–8, 10–30	30	11	14.1	811
1908–9.				
October	20	12	13.0	799
November	16	11	11.5	684
December	15	11	11.7	719
January 1–20, 23–31	45	11	16.0	920
February	29	15	21.9	1,220
March	28	23	27.3	1,680
April	43	28	34.5	2,050
May	50	41	45.7	2,810
June	40	29	34.2	2,040
July	32	25	26.9	1,650
August 1–14, 18–31	29	22	23.1	1,280
September	25	18	19.5	1,160
1909–10.				
October	19	14	17.1	1,050
November	18	16	16.3	970
December 1–8, 10–30	34	15	17.0	978
January 4–31	56	46	51.5	2,860
February	53	50	51.9	2,880
March	60	50	50.6	3,110
April	60	53	57.0	3,390
May	60	44	53.9	3,310
June	45	36	40.8	2,430
July	43	32	35.5	2,180
August	33	24	28.2	1,730
September	25	22	23.3	1,390
1910–11.				
October	27	22	22.8	1,400
November	25	22	22.8	1,360
December	23	20	21.4	1,320
January 1–9, 11–28, 30	80	19	25.8	1,430
February 1–22, 23–28	75	40	47.0	2,520
March 1–7	74	49	58.7	815
April	.....	.....	.....	.....
May 26–31	97	86	91.3	1,090
June 1, 3–30	81	62	74.9	4,310
July	62	42	50.6	3,110
August	40	31	34.6	2,130
September	45	26	29.4	1,750
1911–12.				
October	37	26	30.0	1,840
November	29	24	25.9	1,540
December	26	22	24.0	1,480
January	26	21	22.2	1,360
February	22	19	20.1	1,160
March	64	20	31.0	1,910
April	60	26	34.1	2,050
May	47	38	42.5	2,610
June	46	31	37.7	2,240
July	31	25	28.3	1,740
August	26	19	21.5	1,320
September	20	16	18.0	1,070
The year	64	16	28.0	20,300
1912–13.				
October	38	16	21.8	1,340
November	22	17	18.9	1,120
December	18	16	16.8	1,030
January	17	14	16.0	984
February	22	16	17.1	950
March	29	18	20.9	1,290
April	29	26	27.4	1,630
May	30	21	25.5	1,570
June	22	15	17.7	1,050
July	15	12	13.3	818
September	11	10	10.1	601
1913–14.				
October	10	9.6	9.81	603
November	12	9.2	9.77	581
December	18	9.1	9.77	601
January	86	9.2	17.4	1,070
February	368	21	46.0	2,560
March	55	44	50.8	3,120
April	52	42	48.0	2,860
May	58	44	55.4	3,410
June	58	36	44.0	2,620
July	37	28	32.1	1,970
August	28	22	25.4	1,560
September	22	17.8	19.9	1,180
The year	368	9.1	30.6	22,100
1914–15.				
October	22	15.8	17.2	1,060
November	19.5	14.8	15.8	940
December	21	14.4	15.1	928
January	33	13.5	15.4	947
February	131	17.8	30.9	1,720
March	48	30	34.1	2,100
April	72	40	53.2	3,170
May	152	54	89.1	5,480
June	154	84	114	6,780
July	87	44	63.2	3,820
August	42	28	33.4	2,050
September	29	22	26.1	1,550
The year	154	13.5	62.2	30,500
1915–16.				
October	23	18.4	20.6	1,270
November	21	16.8	18.0	1,070
December	21	14.4	16.9	1,040
January	.....	.....	.....	.....
February	116	80	99.4	5,720
March	180	110	124	7,620
April	130	105	119	7,080
May	105	85	98.4	6,050
June	82	34	53.1	3,160
July	37	28	30.6	1,880
August	32	23	26.0	1,600
September	26	18.8	22.0	1,310
1916–17.				
October	47	19	22.8	1,400
November	19	16	17.5	1,040
December	16	14	14.6	898
January	16	14	14.1	867
February	29	14	15.7	872
March	27	15	19.0	1,170
April	30	22	25.4	1,510
May	34	28	29.1	1,790
June	28	23	25.8	1,540
July	112	16	22.8	1,400
August	24	15	17.6	1,080
September	15	13	13.6	809
The year	112	13	19.9	14,400
1917–18.				
October	12.8	11.8	12.2	750
November	15.0	11.3	11.8	702
December	11.3	10.0	10.7	658
January	11.3	7.5	9.66	594
February	27.0	8.0	10.2	566
March	2,200	10.5	200	12,300
April	40	37	38.8	2,310
May	40	35	37.9	2,330
June	40	27	34.1	2,030
July	30.9	21.2	25.3	1,560
August	25.9	17.6	20.0	1,230
September	22.3	14.2	15.9	946
The year	2,200	7.5	35.9	26,000

NOTE.—All monthly tables computed by United States Geological Survey.

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HIGHLANDS CANAL AT INTAKE WEIR, NEAR MENTONE, CALIF.

Highlands or North Fork canal diverts water from Santa Ana River at the mouth of the canyon, opposite the Mentone Power Co.'s power house.

Discharge measurements of Highlands canal at intake weir, near Mentone, Calif., for 1896–1904.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
		Sec.-feet.			*Sec.-feet.*
1896.			**1901.**		
Nov. 21	J. B. Lippincott	8.50	July 6	S. G. Bennett	13.28
1898.			Aug. 20	do	15.79
Jan. 8	J. B. Lippincott	11.91	Oct. 8	do	14.30
Mar. 9	H. Crowe	10.76	Dec. 5	do	8.53
Apr. 12	J. B. Lippincott	12.40	May 31	do	7.90
29	do	17.03	**1902.**		
June 12	do	11.37	May 31	S. G. Bennet	7.90
Sept. 8	do	13.29	July 10	do	11.50
Oct. 18	F. H. Olmsted	9.85	Sept. 3	W. B. Clapp	11.10
Nov. 9	do	8.12	Nov. 5	S. G. Bennett	10.02
Dec. 8	do	6.95	**1903.**		
1899.			Apr. 24	W. B. Clapp	6
Feb. 18	S. G. Bennett	8.07	May 16	do	18
Mar. 23	do	11.78	Aug. 31	do	15.6
May 6	do	7.70	**1904.**		
31	do	6.74	Jan. 29	W. B. Clapp	10.7
June 15	do	10.30	May 14	do	11.4
July 15	do	13.14	28	do	12.0
27	do	11.92	June 29	do	13.5
Aug. 24	do	4.28	Sept. 21	do	16.4
1900.			Nov. 11	E. C. La Rue	7.8
Apr. 14	S. G. Bennett	7.48			
July 13	do	(a)			
Oct. 2	W. W. Coekins, jr.	5.61			

a Water not going through weir basin; weir was being repaired.

Daily discharge, in second-feet, of Highlands canal at Sand Box weir, near Mentone, Calif., for 1901 and 1903–1904.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1901.							
1	12.7	14.7	14.6	16.5	16.3	8.8	7.9
2	11.7	14.2	13.6	16.5	15.9	9.0	7.9
3	11.3	12.5	.....	16.5	14.4	9.8	7.7
4	12.1	12.0	13.0	16.5	14.4	8.8	8.2
5	11.4	12.6	12.4	16.5	14.3	8.8	8.2
6	11.5	13.9	14.1	15.4	14.1	8.2	10.0
7	12.2	13.8	15.8	16.5	13.8	8.4	7.4
8	12.3	14.9	14.4	15.8	14.3	10.5	7.4
9	11.1	14.4	14.5	12.8	14.5	10.5	7.0
10	11.9	14.9	14.5	16.2	14.1	9.5	7.4
11	12.7	15.3	15.4	16.1	14.3	9.2	7.2
12	12.7	14.7	14.6	16.1	14.3	10.3	6.7
13	12.0	14.6	15.3	15.2	13.4	10.8	6.7
14	12.0	14.7	15.4	15.4	12.1	10.0	7.0
15	10.0	15.3	16.0	14.5	14.3	9.2	6.3
16	11.3	15.3	19.4	15.4	13.1	9.5	7.0
17	11.1	14.7	.....	16.1	13.3	10.4	7.0
18	11.1	15.4	13.0	15.8	15.0	9.5	7.0
19	11.1	12.9	13.1	16.5	14.5	9.5	7.2
20	14.6	12.8	12.0	16.4	14.2	7.7	7.4
21	14.6	12.3	.....	14.3	14.5	8.9	7.4
22	14.0	14.6	.....	15.4	12.0	7.9	7.2
23	13.9	15.3	6.0	14.5	12.1	9.5	7.2
24	14.1	14.2	12.0	14.6	14.3	11.1	7.2
25	14.4	14.2	17.5	16.3	12.0	9.7	7.2
26	13.9	15.0	17.5	16.3	12.1	9.2	7.0
27	14.9	14.6	17.5	16.5	11.0	10.0	7.0
28	14.0	14.4	17.5	16.5	9.0	8.2	7.2
29	14.3	15.1	17.5	13.9	8.8	8.2	7.2
30	14.1	14.4	17.5	16.3	11.2	9.2	7.2
31	.....	14.2	17.5	.....	12.0	.....	7.2

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Daily discharge, in second-feet, of Highlands canal at Sand Box weir, near Mentone, Calif., for 1901 and 1903–1904—Continued.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1903.						1903.					
1	7.9	20.9	17.6	17.2	16.3	16	13.4	18.2	16.9	17.2	16.3
2	12.2	20.9	16.9	16.3	17.2	17	13.4	17.6	14.4	17.6	16.3
3	12.2	20.9	17.6	16.9	15.3	18	13.4	17.6	14.4	17.2	16.3
4	12.2	20.9	16.3	17.2	16.3	19	13.4	17.6	16.9	17.2	14.7
5	12.2	19.6	16.3	17.2	16.3	20	13.4	16.9	16.9	17.2	15.3
6	12.2	19.6	16.9	17.2	16.3	21	13.4	16.9	17.6	17.2	14.4
7	13.4	19.6	16.9	17.2	16.3	22	13.4	16.9	16.9	17.2	16.3
8	13.4	19.6	16.0	17.2	16.3	23	13.4	16.9	17.2	16.3	15.6
9	13.4	16.9	16.0	17.2	16.3	24	21.0	16.9	17.2	17.2	16.3
10	13.4	14.4	16.3	16.3	16.3	25	21.0	16.9	17.2	16.9	16.3
11	13.4	16.9	16.3	17.2	16.3	26	21.0	16.9	17.2	16.9	15.3
12	13.4	16.9	16.3	16.3	16.3	27	21.0	16.9	17.2	15.6	16.3
13	13.4	18.2	16.3	16.3	16.3	28	21.0	16.9	17.2	15.6	15.3
14	13.4	18.2	16.3	16.3	16.3	29	21.0	16.9	17.2	15.6	11.0
15	13.4	16.9	16.3	16.3	16.3	30	21.0	16.9	16.9	15.6	14.4
						31	21.0	.....	16.3	15.6	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	13.6	11.0	11.0	8.9	8.6	8.6	0	13.2	13.2	13.2	15.3	15.6
2	13.6	11.0	7.9	8.9	8.6	8.6	8.6	13.2	13.2	13.2	15.3	15.6
3	11.0	11.0	7.9	8.9	8.6	8.6	8.6	13.2	13.2	15.3	15.3	15.6
4	11.0	11.0	7.9	8.9	8.6	8.6	8.6	13.2	13.2	15.3	15.3	15.6
5	11.0	11.0	7.9	8.9	8.6	8.6	8.6	13.2	13.2	15.0	15.3	15.6
6	11.0	11.0	7.9	8.9	8.6	8.6	8.6	13.2	13.2	15.0	15.3	16.0
7	11.0	10.2	7.9	8.9	8.6	8.6	8.6	13.2	13.2	15.0	15.3	16.0
8	11.0	11.0	7.9	8.9	8.6	8.6	8.6	12.7	14.1	15.0	15.3	15.6
9	11.0	11.0	7.9	8.9	8.6	8.6	16.0	12.7	14.1	15.0	15.3	16.0
10	12.2	10.2	7.9	8.9	8.6	8.6	16.0	12.7	8.9	15.0	15.3	16.0
11	12.2	11.0	7.9	8.9	8.6	8.6	16.0	12.7	14.1	15.0	15.3	16.0
12	12.2	10.2	7.9	8.9	8.6	8.6	16.0	13.5	14.1	15.0	16.3	16.0
13	12.2	10.2	7.9	8.9	8.6	8.6	16.0	13.5	14.1	15.0	15.3	16.0
14	13.6	10.2	7.9	8.9	8.6	8.6	16.0	11.2	14.1	15.0	15.3	16.0
15	13.6	10.2	7.9	8.9	8.6	8.6	16.0	11.0	14.1	15.0	15.3	16.0
16	13.6	10.2	7.9	8.9	8.6	8.6	16.0	11.0	13.2	15.0	15.3	16.0
17	13.6	9.9	8.9	8.9	8.6	8.6	14.4	11.0	13.2	15.0	16.6	16.0
18	14.7	9.4	8.9	8.9	8.6	8.6	14.4	11.0	13.2	15.0	16.6	16.0
19	14.7	9.4	8.9	8.9	8.6	8.6	14.4	10.7	13.2	15.0	16.6	16.0
20	15.3	9.4	8.9	8.9	8.6	8.6	14.4	10.7	13.2	15.0	16.6	16.0
21	15.3	9.4	8.9	8.9	8.6	8.6	14.4	10.7	13.2	15.0	16.6	16.0
22	15.3	9.4	8.9	8.9	8.6	8.6	14.4	10.7	13.2	15.0	16.6	16.0
23	15.3	9.4	8.9	8.9	8.6	0	14.4	11.5	13.2	15.0	16.6	16.0
24	15.3	9.4	8.9	8.9	8.6	0	16.9	11.5	13.2	15.0	16.6	16.0
25	15.3	9.4	8.9	8.9	8.6	12.1	16.9	11.5	13.2	15.0	16.6	16.0
26	15.3	9.4	8.9	8.9	8.6	12.1	16.9	11.5	13.2	15.0	16.6	16.0
27	15.3	9.4	8.9	8.9	8.6	8.6	16.9	12.4	13.2	14.1	15.6	16.0
28	15.3	9.4	8.9	8.9	8.6	0	16.9	11.5	13.2	14.1	15.6	16.0
29	15.3	9.4	8.9	8.6	8.6	0	16.9	13.2	13.2	14.1	15.6	16.0
30	11.8	9.4	8.9	8.6	8.6	0	16.9	11.5	13.2	14.1	15.6	16.0
31	11.8	.....	8.9	8.6	8.6	0	.....	11.5	.....	14.1	15.6	.....

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1904–5.				1904–5.				1904–5.			
1	16.0	8.4	8.4	11	13.8	8.4	6.0	21	14.1	8.4	6.0
2	14.1	8.4	6.0	12	13.8	8.4	6.0	22	14.1	8.4	6.0
3	14.1	8.4	6.0	13	13.5	8.4	6.0	23	14.1	8.4	5.8
4	14.1	8.4	6.2	14	13.5	8.4	6.2	24	14.1	8.4	6.0
5	14.1	8.4	6.2	15	13.5	8.4	4.3	25	14.1	8.4	6.0
6	14.1	8.4	6.2	16	14.1	8.4	5.8	26	13.5	8.4	6.0
7	14.1	8.4	6.2	17	14.1	8.4	5.8	27	13.5	8.4	6.0
8	13.5	8.4	6.2	18	14.1	8.4	6.4	28	13.5	8.4	6.0
9	14.1	8.4	6.2	19	14.1	8.4	5.5	29	12.2	8.4	5.8
10	14.1	8.4	6.0	20	14.1	8.4	5.8	30	10.0	8.4	5.8
								31	9.6	.....	5.8

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REDLANDS CANAL NEAR MENTONE CALIF.

Redlands or South Fork canal diverts water from Santa Ana River at the mouth of the canyon opposite the Mentone Power Co.'s power house.

Discharge measurements of Redlands or South Fork canal at Sand Box weir, near Mentone, Calif., for 1896–1904.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
		Sec.-feet.			*Sec.-feet.*
1896.			**1900.**		
July 29	J. H. Quinton	40.62	July 13	S. G. Bennett	10.65
Nov. 21	J. B. Lippincott	12.00	Oct. 2	W. W. Cockins, jr	6.25
1898.			**1901.**		
Jan. 8	J. B. Lippincott	21.32	Mar. 30	S. G. Bennett	30.00
Mar. 9	H. Crowe	22.22	May 31	do	19.60
Apr. 12	J. B. Lippincott	16.70	July 6	do	19.91
29	do	13.00	Aug. 20	do	16.75
June 12	do	18.40	Oct. 8	do	24.10
July 23	do	15.00	Dec. 5	do	14.27
Sept. 8	do	15.40			
Oct. 18	F. H. Olmsted	7.26	**1902.**		
Nov. 9	do	10.20	May 31	S. G. Bennett	19.60
Dec. 8	do	12.00	July 10	do	10.06
			Sept. 3	W. B. Clapp	14.60
1899.			Nov. 5	S. G. Bennett	7.55
Jan. 12	S. G. Bennett	15.10	**1903.**		
Feb. 18	do	15.70	Apr. 24	W. B. Clapp	9.6
Mar. 23	do	17.00	May 16	do	29.0
May 6	do	15.49	Aug. 31	do	28.0
31	do	14.67			
June 15	do	7.76	**1904.**		
27	do	12.40	Jan. 29	W. B. Clapp	12.3
July 15	do	12.70	May 14	do	23.8
Aug. 24	do	5.71	28	do	26.0
			June 29	do	22.0
1900.			Nov. 11	E. C. La Rue	9.6
Apr. 14	S. G. Bennett	12.10			

Daily discharge, in second-feet, of Redlands canal at Sand Box weir, near Mentone, Calif., for 1901 and 1903–4.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1901.							
1	20.0	22.7	23.9	37.3	28.6	22.0	14.9
2	24.6	18.9	31.4	30.0	32.9	24.0	14.9
3	24.0	18.9	.....	29.3	30.0	17.1	14.4
4	22.0	20.7	23.3	30.2	30.0	15.3	13.8
5	23.3	23.7	22.0	27.3	28.6	14.0	13.8
6	22.7	22.8	27.9	29.3	28.0	16.6	12.0
7	20.8	20.7	25.2	23.3	26.6	16.9	16.4
8	19.5	18.9	20.7	25.3	28.0	14.1	16.4
9	20.6	18.3	22.0	23.3	26.6	13.8	15.2
10	21.4	19.5	17.1	21.4	25.3	18.6	14.7
11	20.7	20.7	18.9	25.9	21.4	16.1	15.2
12	17.1	19.5	14.8	27.3	23.3	13.0	16.6
13	17.7	18.9	25.2	28.0	26.6	12.5	16.4
14	18.3	18.9	23.3	28.0	29.5	11.4	12.8
15	18.9	19.5	24.6	27.3	30.0	10.9	14.1
16	20.1	19.5	27.4	27.3	30.0	12.0	15.8
17	20.7	19.5	.0	27.3	31.4	13.8	15.8
18	27.3	18.3	.0	30.0	30.0	14.1	15.2
19	28.6	21.4	11.6	30.0	30.0	14.1	14.1
20	24.6	22.6	9.3	28.6	28.0	17.8	14.1
21	22.6	22.6	34.3	30.0	29.4	16.4	14.9
22	27.3	23.3	11.6	34.3	27.0	14.9	14.9
23	26.6	24.6	28.0	28.6	29.4	11.2	16.4
24	26.6	23.9	28.0	30.0	25.8	11.2	16.6
25	23.3	20.7	30.0	27.6	26.0	12.2	16.4
26	23.3	20.7	28.0	24.6	28.0	12.0	15.8
27	22.6	21.4	32.9	24.6	17.0	12.0	15.8
28	20.7	20.7	28.6	26.6	12.0	14.4	15.2
29	18.3	18.9	31.4	27.9	9.0	14.4	14.9
30	18.9	22.6	34.3	30.0	9.0	13.6	13.8
31	.....	24.6	36.4	.....	30.0	.....	13.8

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Daily discharge, in second-feet, of Redlands canal at Sand Box weir, near Mentone, Calif., for 1901 and 1903–4—Continued.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1903.						1903.					
1	15.9	36.5	29.8	39.5	29.8	16	32.9	36.5	31.2	30.6	33.8
2	17.1	36.5	29.8	39.5	27.2	17	32.9	36.5	35.1	30.6	31.2
3	21.7	36.5	33.8	39.5	28.4	18	32.9	36.5	38.1	30.6	27.8
4	10.6	36.5	31.2	38.1	26.0	19	35.8	36.5	37.3	32.5	28.4
5	23.7	36.5	33.8	34.5	24.8	20	35.8	36.5	37.3	31.2	26.0
6	12.1	36.5	31.2	33.8	27.2	21	38.8	36.5	34.5	28.4	26.0
7	47.1	36.5	31.2	33.2	28.4	22	38.8	33.8	33.8	31.2	24.2
8	54.3	36.5	28.4	33.2	28.4	23	38.8	33.8	33.8	33.8	27.2
9	24.6	36.5	33.8	35.1	28.4	24	38.8	33.8	33.8	33.2	28.4
10	22.0	36.5	33.8	35.8	33.8	25	38.8	31.2	36.5	31.2	29.8
11	30.0	36.5	38.1	33.8	33.8	26	38.8	31.2	36.5	32.5	28.4
12	30.0	35.1	35.1	33.8	33.8	27	38.8	31.2	36.5	35.8	31.2
13	30.0	38.1	33.8	33.8	36.5	28	38.8	29.8	36.5	35.8	38.1
14	32.9	38.1	33.8	33.8	35.1	29	38.8	29.8	36.5	33.8	29.2
15	32.9	33.8	31.2	33.8	35.1	30	38.8	38.1	39.5	32.5	26.0
						31	38.8	.....	39.5	27.8	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	27.2	33.8	17.1	16.6	14.4	18.7	14.4	31.2	24.2	24.2	25.4	29.2
2	26.6	20.4	17.7	16.6	14.4	23.5	14.4	31.2	24.2	24.2	26.0	26.0
3	14.4	15.4	17.7	16.6	15.4	22.3	16.6	31.2	27.8	24.8	25.4	24.8
4	22.8	18.2	17.7	16.6	15.4	21.0	16.6	31.2	27.8	27.2	27.2	28.4
5	21.0	14.4	17.7	14.4	18.7	17.1	18.7	28.4	29.8	27.2	27.8	31.2
6	19.8	14.4	17.7	13.3	18.7	17.1	18.7	26.0	29.8	29.8	29.2	35.1
7	22.3	16.6	17.7	13.3	16.6	18.7	18.7	26.0	31.2	26.0	28.4	36.5
8	24.4	16.6	17.7	15.4	17.7	18.7	18.7	26.0	30.6	22.3	24.8	29.8
9	27.2	18.7	17.7	15.4	17.4	18.7	21.0	26.0	28.4	22.3	22.3	29.8
10	25.4	17.7	18.2	15.4	17.7	17.7	18.7	26.0	28.4	26.0	22.3	29.8
11	24.8	17.1	16.6	14.4	17.7	14.4	18.7	21.0	22.3	26.0	22.3	31.2
12	24.8	17.1	14.4	14.9	17.1	10.3	23.5	21.0	19.8	26.0	26.0	31.2
13	25.4	17.1	15.4	16.0	17.1	17.7	23.5	18.7	17.7	26.0	.0	29.8
14	27.8	17.1	15.4	15.4	17.1	17.7	23.5	23.5	17.7	27.8	14.4	29.8
15	30.6	17.1	14.4	15.4	17.7	18.2	23.5	23.5	22.3	26.9	14.4	29.8
16	29.2	17.7	16.6	15.4	17.7	17.7	23.5	23.5	24.8	29.2	23.5	31.9
17	30.6	17.7	16.6	15.4	16.0	16.6	23.5	23.5	24.8	29.8	27.2	32.5
18	31.9	18.2	15.4	15.4	16.0	14.4	23.5	26.0	24.8	29.8	26.0	32.5
19	27.8	18.2	15.4	14.4	19.3	16.6	23.5	26.0	25.4	27.8	27.2	36.5
20	30.6	18.2	15.4	14.4	19.3	14.4	16.6	26.0	26.6	25.4	26.6	35.1
21	28.4	18.2	15.4	13.8	19.3	18.7	18.7	27.2	27.2	24.8	35.5	36.5
22	29.8	16.6	15.4	13.3	17.7	18.7	26.0	27.2	27.2	24.8	33.8	33.8
23	33.2	16.6	15.4	13.3	17.7	.0	26.0	24.2	26.6	24.8	26.0	28.4
24	32.5	16.6	16.6	13.3	17.1	.0	28.4	24.8	26.6	21.6	26.0	28.4
25	32.5	16.6	16.6	13.3	17.1	.0	28.4	24.8	26.6	18.7	24.8	27.8
26	33.2	16.6	16.6	14.4	16.6	.0	31.2	29.8	26.0	24.8	27.2	25.4
27	33.8	16.6	16.6	14.4	17.7	12.3	31.2	27.8	24.2	25.4	30.6	24.2
28	33.2	16.6	16.6	14.4	15.4	14.4	31.2	27.2	23.5	25.4	26.0	19.8
29	31.9	16.6	16.6	14.4	15.4	6.7	31.2	26.0	23.5	19.8	24.8	18.7
30	36.5	17.1	16.6	13.3	.....	14.4	31.2	24.8	24.2	21.6	26.6	18.7
31	36.5	.....	16.6	13.3	.....	14.4	.....	24.8	.....	23.5	29.8	.....

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1904.				1904.				1904.			
1	27.2	12.3	9.6	11	18.7	10.1	13.6	21	33.8	8.9	12.5
2	36.5	10.3	11.8	12	38.1	10.3	12.5	22	35.1	10.1	12.5
3	36.5	10.8	14.0	13	29.8	10.8	11.1	23	29.8	10.1	12.8
4	32.5	12.3	13.8	14	24.8	10.8	12.3	24	33.2	10.1	12.3
5	29.8	12.3	12.5	15	24.8	10.8	13.3	25	28.4	9.2	12.8
6	29.8	12.3	12.3	16	23.5	11.3	13.3	26	24.8	8.7	12.8
7	29.8	11.3	12.3	17	24.8	10.1	15.1	27	23.5	9.4	12.0
8	29.2	10.8	13.8	18	31.9	10.8	12.5	28	26.4	9.6	11.8
9	30.6	9.9	12.8	19	31.2	10.3	14.0	29	23.5	11.8	13.6
10	26.0	9.9	13.1	20	33.2	8.7	12.1	30	33.2	9.4	12.8
								31	11.3	.....	15.7

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WATERMAN CANYON CREEK NEAR SAN BERNARDINO, CALIF.

LOCATION.—In SW. ¼ SW. ¼ sec. 2, T. 1 N., R. 4 W., above old toll bridge at mouth of canyon, about 6 miles north of San Bernardino, San Bernardino County.

DRAINAGE AREA.—4.55 square miles (measured on topographic map).

ELEVATION.—About 2,100 feet above sea level.

RECORDS AVAILABLE.—November 2, 1911, to October 30, 1914.

GAGE.—Vertical staff fastened to an alder tree on left bank about 300 feet above bridge.

DISCHARGE MEASUREMENTS.—Made from foot plank 15 feet below gage or by wading.

CHANNEL AND CONTROL.—Boulders and gravel; shifts during high water. (See Pl. XVI, *A*, p. 451).

EXTREME OF DISCHARGE.—1912–1914: Maximum stage occurred during January or February, 1914; stage and discharge unknown; no flow September 15 to 17, 1913.

ACCURACY.—Stage-discharge relation not permanent. Rating curves well defined except for high stages. Gage read to hundredths once daily. Daily discharge ascertained by applying gage height to rating table or for days on which gage was not read, estimated by comparison with record of flow on Devil Canyon Creek. Records for 1911 and 1912, good; for other periods, fair.

Discharge measurements of Waterman Canyon Creek near San Bernardino, Calif., for 1911–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height	Discharge.
		Feet.	*Sec-ft.*			*Feet.*	*Sec.-ft.*
1911.				1913.			
Nov. 2	F. C. Ebert	1.62	1.8	July 11	F. C. Ebert	1.63	0.3
1912.				Oct. 6	do	1.63	.3
Jan. 10	F. C. Ebert	1.72	2.1	8	do	1.72	.5
12	do	1.70	2.1	1914.			
30	do	1.65	2.1	Jan. 13	F. C. Ebert	1.82	1.1
Feb. 18	do	1.62	1.8	14	do	1.81	1.2
Mar. 9	do	1.94	8.2	16	do	2.26	11
19	do	1.88	4.5	16	do	2.21	9.5
Apr. 19	do	2.01	9.2	Feb. 6	do	1.93	10
May 28	do	1.78	2.8	27	do	2.25	27
Aug. 3	do	1.67	1.0	Mar. 11	do	2.02	14
28	H. D. McGlashan	1.64	1.0	29	H. D. McGlashan	1.89	9.5
28	F. C. Ebert	1.64	1.0	Apr. 16	F. C. Ebert	1.75	7.6
Oct. 22	do	1.66	.9	30	do	2.02	14
Dec. 10	do	1.84	1.7	May 1	do	2.00	13
1913.				8	do	1.86	8.4
Jan. 14	F. C. Ebert	1.81	1.4	16	do	1.83	8.3
Feb. 10	do	1.83	2.8	June 26	do	1.62	3.1
11	do	1.82	2.5	Aug. 13	do	1.52	1.8
Mar. 4	do	2.01	4.8	Sept. 21	do	1.48	1.2
Apr. 4	do	1.89	2.0	1915.			
23	H. D. McGlashan	1.85	2.0	Apr. 14	F. C. Ebert	2.03	5.4
May 30	F. C. Ebert	1.74	1.5				

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Daily discharge, in second-feet, of Waterman Canyon Creek near San Bernardino, Calif., for 1911–1914.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	.....	1.7	2.8	2.9	1.9	2.0	6.2	5.0	2.9	2.6	2.2	1.3
2	.....	1.7	2.9	2.7	2.0	1.8	5.9	4.7	2.9	2.6	2.0	1.2
3	.....	1.8	2.9	2.7	2.1	1.8	5.5	4.5	2.9	2.3	2.0	1.2
4	.....	1.8	2.9	2.8	2.2	2.5	5.2	4.3	2.9	2.3	2.0	1.2
5	.....	2.0	2.5	2.8	2.1	.....	5.2	4.0	2.9	2.4	1.2	1.3
6	.....	1.8	2.5	2.8	2.1	.....	5.2	4.5	2.9	2.4	1.1	1.3
7	.....	1.9	3.4	2.8	2.1	.....	5.2	4.5	2.9	2.2	1.2	1.3
8	.....	2.0	3.1	2.8	2.1	.....	5.5	4.7	2.9	2.2	1.2	1.3
9	.....	2.0	2.9	2.8	2.1	8.2	20	4.7	2.9	2.2	1.1	1.1
10	.....	2.0	2.9	2.8	2.0	57	10.0	4.5	2.9	2.0	1.0	1.2
11	.....	2.4	2.5	2.6	2.0	30	24	4.3	2.9	2.0	1.0	1.1
12	.....	2.1	2.3	2.4	2.0	47	16.7	4.3	2.9	1.8	.9	.9
13	.....	2.1	2.3	2.2	2.1	22	13.4	4.0	2.9	1.8	.9	.9
14	.....	2.1	2.4	2.2	2.1	18	13.4	4.0	2.8	1.8	.9	1.0
15	.....	2.1	2.4	2.2	2.1	14	13.4	4.0	2.8	1.7	1.0	1.1
16	.....	2.4	2.3	2.2	2.1	12	12.4	3.8	2.4	2.0	1.1	1.3
17	.....	2.5	2.9	2.1	2.1	8.8	11.4	3.8	2.2	2.0	1.2	1.2
18	.....	2.6	2.9	2.1	1.8	7.8	11.0	3.8	2.2	2.2	1.2	1.1
19	.....	2.6	2.6	2.1	1.8	5.9	9.5	3.8	2.4	2.0	1.1	1.1
20	.....	2.5	2.6	2.1	1.9	6.8	8.2	3.8	2.2	2.0	1.0	1.1
21	.....	2.6	2.6	2.1	1.7	5.9	7.8	3.8	2.6	2.0	1.0	1.0
22	.....	2.6	2.8	2.1	1.7	6.2	7.2	3.8	2.9	2.2	1.0	1.0
23	.....	2.6	2.9	2.0	1.7	5.2	6.8	3.8	2.9	2.2	1.0	1.0
24	.....	2.6	2.8	2.0	1.8	5.0	6.5	3.8	2.6	2.2	1.0	1.3
25	.....	2.6	2.8	2.1	1.8	7.8	6.5	3.6	2.6	2.2	1.0	.9
26	.....	2.6	2.8	2.1	1.8	7.8	6.2	3.6	2.8	2.0	.9	.8
27	.....	2.6	2.8	2.1	1.8	8.2	6.5	3.6	2.8	2.0	1.0	.9
28	.....	2.6	3.1	2.1	1.8	6.5	5.9	3.1	2.8	2.0	1.0	.9
29	.....	2.8	3.1	2.0	1.6	5.9	5.2	2.9	2.9	2.0	1.3	1.2
30	.....	2.8	3.4	2.0	.....	6.5	5.0	2.9	2.6	2.2	1.2	1.3
31	.....	.....	3.1	2.0	.....	6.4	.....	2.9	.....	2.2	1.3	.....

NOTE.—Daily discharge determined from a fairly well defined rating curve applicable Nov. 2, 1911, to Mar. 4, 1912, and Mar. 19 to Sept. 30, 1912. Indirect method for shifting channels used Mar. 9–18, 1912. No estimates have been attempted for the flood period Mar. 5–8, 1912. Discharge value for Mar. 31, 1912, interpolated.

1912–13.												
1	1.0	.9	1.5	1.5	1.0	7	2.5	1.0	2.0	1.0	1.0	3.0
2	4	.9	1.5	2	1	6	2.5	1.5	2	1	.7	1.5
3	8	.9	1.5	1	1	5	2.5	1.5	2	1.5	.8	3
4	2	.9	1.5	2.5	1	5	2.5	1.5	2	1.5	1	1.5
5	2	.9	2	2	1	5	2	1	1.5	1.5	.6	.2
6	2	.9	2	2.5	1	4.5	2.5	1.5	1.5	1	.9	.1
7	2	.9	2	3	1	5	2	1	2	.7	.8	1
8	2	.9	2	2.5	4	4	2	1	1	.3	.6	1.5
9	2	.9	2.5	2.5	4	3.5	2	1	2	.9	.9	1.5
10	2	1.5	2.5	3.5	3	3	1.5	1.5	1.5	.6	.8	1
11	2	2	2	2.5	2.5	4	2	1.5	1.5	.3	.9	1
12	2	2.5	2	2	2.5	3.5	2	1.5	1	1.5	1	.7
13	1.5	2	2	1.5	3	3	1.5	1	1	1.5	.1	1
14	2	1	1.5	1.5	2.5	3	2	1.5	.9	1.5	.2	.3
15	1.5	1.5	2	3	2	2.5	1.5	1	1.5	1	1.5	.0
16	1.5	1.5	2	2.5	2	2.5	2	1.5	.9	1	1	.0
17	1.5	1.5	2	2	2	2.5	2	1.5	1	.3	1	.0
18	1.5	1.5	2	1.5	2	3	2	1	1.5	1	1.5	1
19	1.5	2	2	1.5	2.5	2.5	2.5	.7	1.5	1	.1	.9
20	2	2	2.5	1	2.5	3.5	2.5	.8	.8	.8	.9	1
21	2	1.5	2	1	2	2.5	2.5	.5	1	1.5	1	1
22	.9	2	2	.9	3	3	2.5	.5	1.5	1.5	1.5	.8
23	.9	2	1.5	.3	3.5	4	2	.6	.9	1	1	.8
24	.9	1.5	1.5	.8	25	3.5	2	.6	1.5	.9	.9	.9
25	.9	1.5	1.5	.7	43	3	1.5	1.5	2	.6	.5	.2
26	.9	2	2	.6	12	2.5	2	2	2	1	.2	1
27	.9	1.5	1.5	.7	11	2.5	1	2	2	1.5	.8	1.5
28	.9	1.5	1.5	.8	8.5	2.5	1.5	2	1.5	1.5	1.5	1.5
29	.9	2	1.5	.7	.....	2	1.5	2	1.5	.9	2	.8
30	.9	1.5	1.5	.6	.....	2.5	1	1.5	1.5	.9	2	1.5
31	.9	.....	1.5	.7	.....	2.5	.....	1.5	.....	1.5	2.5	.....

NOTE.—Daily discharge determined from fairly well defined rating curves applicable as follows: Oct. 1 to 3, 1912, same as for Mar. 19 to Sept. 30, 1912; Oct. 4 to 21, 1912, and Feb. 26 to April 19, 1913; Nov. 12, 1912, to Feb. 8, 1913, and Apr. 20 to May 25, 1913; Feb. 9 to 25, 1913, and May 26 to Sept. 30, 1913. Discharge estimated Oct. 22 to Nov. 9, 1912, because of uncertainty in gage-height record; that for other periods for which record is not given estimated by comparison with record of Devil Canyon Creek near San Bernardino.

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Daily discharge, in second-feet, of Waterman Canyon Creek near San Bernardino, Calif., for 1911–1914—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug,	Sept.	Oct.
1913–14.													
1	0.8	0.6	1.4	2.7	20	30	9	12	6	4.2	3.5	2.0	1.7
2	1.0	2.9	1.2	2.4	15	28	9	10	7	4.6	2.1	2.3	.7
3	1.2	1.1	1.2	2.1	14	23	8	12	6.5	3.1	3.3	2.1	3.5
4	.4	1.2	1.3	3.6	13	22	8.5	10	6	3.5	2.9	1.7	2.8
5	.3	.8	1.5	1.9	12	23	11	9.5	7	3.9	2.1	1.3	3.1
6	1.1	.5	1.3	2.0	11	24	10	9	6.5	3.9	2.3	1.3	2.5
7	1.2	.8	1.3	1.9	10	25	10	9	9	3.5	3.1	1.8	2.8
8	.5	.8	1.5	1.8	10	19	9	9	8.5	3.5	1.5	2.0	2.8
9	2.0	.6	1.1	1.9	9	17	8.5	7.5	9	2.9	1.7	1.8	1.8
10	.3	.5	1.5	1.9	8.5	17	9.5	7.5	6	3.3	2.1	.8	2.1
11	.4	.8	1.5	2.0	8	17	9.5	8	6	3.3	1.5	1.5	2.3
12	.3	2.2	1.6	1.9	8	13	9	7.5	6.5	3.1	1.3	1.7	1.8
13	.4	2.0	1.6	1.2	6.5	14	8	7	5.5	3.9	1.3	1.3	1.3
14	1.2	1.4	1.8	1.1	7.5	12	8	8	5.5	4.6	2.3	.8	1.2
15	.3	1.2	1.6	12	7	12	7.5	7.5	5	3.1	1.8	2.0	1.3
16	.3	1.5	1.8	5.5	7	11	7.5	8.5	5.5	3.5	2.3	2.1	1.4
17	.2	1.4	1.6	7.5	7.5	10	7.5	7	6	3.9	1.3	1.7	2.6
18	.2	1.2	1.9	54	12	9.5	7	7	5.5	2.9	2.3	2.3	1.1
19	.6	4.8	2.0	34	15	11	7.5	7.5	5.5	3.5	.8	2.5	2.8
20	.5	3.4	1.9	24	125	10	6.5	6.5	6	2.9	1.7	1.3	2.9
21	.7	2.2	2.0	18	175	10	9	6.5	5	3.3	2.1	2.1	4.4
22	.3	1.9	4.4	17	100	9.5	8	7	5	4.4	3.7	2.3	2.8
23	.3	1.6	3.0	15	60	9.5	10	7	5.5	4.0	1.2	2.1	2.9
24	.2	1.3	2.9	17	45	9.5	7.5	7	4.6	3.5	2.1	1.3	3.1
25	.6	1.6	3.0	46	37	9	8	7	5	3.1	1.2	1.2	2.8
26	.5	1.6	2.5	150	92	9.5	7	7	3.5	2.6	.9	1.8	2.6
27	.3	1.4	2.9	75	25	9.5	7.5	7	3.1	3.9	2.3	1.6	2.0
28	.4	1.0	2.2	40	30	11	28	7.5	3.9	2.8	2.1	1.3	1.8
29	.5	1.2	2.2	30	.....	9.5	38	7	4.6	3.3	1.3	2.1	2.8
30	.8	1.3	3.4	25	.....	11	13	6	4.4	3.5	2.3	2.0	3.1
31	.5	.....	3.6	20	.....	9.5	.....	6	.....	3.5	1.8	.....	.....

Monthly discharge of Waterman Canyon Creek near San Bernardino, Calif., for 1911–1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1911–12.					**1912–13.**				
November	2.8	1.7	2.28	136	August	2.5	0.1	0.97	60
December	3.4	2.3	2.78	171	September	3	0	1.01	60
January	2.9	2.0	2.35	144					
February	2.2	1.6	1.94	112	The year	43	0	1.92	1,390
March (27 days)	57	1.8	11.7	627					
April	24	5.0	9.03	537	**1913–14.**				
May	5.0	2.9	3.96	243	October	2.0	.2	.59	36
June	2.9	2.2	2.74	163	November	4.8	.5	1.49	89
July	2.6	1.7	2.12	130	December	4.4	1.1	2.02	124
August	2.2	.9	1.19	73.2	January	150	1.1	19.9	1,220
September	1.3	.8	1.12	66.6	February	175	6.5	31.8	1,770
					March	30	9	14.7	904
1912–13.					April	38	6.5	10.2	607
October	8	.9	1.77	109	May	12	6	7.90	486
November	2.5	.9	1.47	87	June	9	3.1	5.77	343
December	2.5	1.5	1.84	113	July	4.6	2.6	3.52	216
January	3.5	.6	1.62	100	August	3.7	.8	2.01	124
February	43	1	5.34	297	September	2.5	.8	1.74	104
March	7	2	3.50	215					
April	2.5	1	1.98	118	The year	175	.2	8.32	6,020
May	2	.5	1.26	77					
June	2	.8	1.48	88	**1914.**				
July	1.5	.3	1.05	65	October 1 to 30	4.4	.7	2.36	140

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DEVIL CANYON CREEK NEAR SAN BERNARDINO, CALIF.

LOCATION.—In SE. ¼ NE. ¼ sec. 6, T. 1 N., R. 4 W., in Angeles National Forest, at mouth of canyon, 200 feet below ford, and 7 miles northwest of San Bernardino, San Bernardino County.

DRAINAGE AREA.—6.16 square miles (measured on topographic map).

ELEVATION.—About 1,800 feet above sea level.

RECORDS AVAILABLE.—November 1, 1911, to September 30, 1912, and October 1, 1913, to September 30, 1914. (Discharge measurements only for year 1912–13.)

GAGE.—Vertical staff fastened to alder tree on left bank about 200 feet below ford; weir gage was a vertical staff in pool directly above weir, 500 feet above original staff.

DISCHARGE MEASUREMENTS.—Made from foot plank about 100 feet below gage or by wading.

CHANNEL AND CONTROL.—Boulders and gravel; somewhat shifting during high stages.

EXTREMES OF DISCHARGE.—1912–1914: Maximum stage recorded, 4.31 feet at 8 a. m. January 26, 1914 (discharge, 204 second-feet); minimum stage recorded, 1.28 feet August 21 and 22, 1912 (discharge, 0.08 second-foot).

DIVERSIONS.—Severance canal, which has its intake on left bank at weir 500 feet above original gage, occasionally diverts a small amount of water for irrigation. This diversion, whenever reported, has been combined with discharge of creek to give total run-off from drainage area.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined. Gage read to hundredths usually twice daily except for periods when no observations were made. Daily discharge ascertained by applying mean daily gage height to rating table discharge. August 28 to September 30, 1912, and October 1, 1913, to January 24, 1914, determined by means of a 30-inch Cippoletti weir; discharge for days when gage was not read, estimated by comparison with record of flow of Waterman Canyon Creek. Records fair.

COOPERATION.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Devil Canyon Creek near San Bernardino, Calif., for 1911–1914.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1911.				**1913.**			
Nov. 1	F. C. Ebert	1.48	2.1	Apr. 23	H. D. McGlashan	1.68	2.0
				July 11	F. C. Ebert	1.43	.4
1912.				Oct. 8	do	1.33	a.2
Jan. 12	F. C. Ebert	1.55	2.9				
Feb. 19	do	1.51	2.0	**1914.**			
Mar. 10	do	2.15	18	Jan. 13	F. C. Ebert	1.59	a1.6
19	do	1.74	4.5	16	do	1.97	a8.9
Apr. 19	do	1.89	7.2	16	do	1.81	a5.2
May 28	do	1.63	2.5	Feb. 6	do	1.74	7.8
Aug. 3	do	1.43	.4	27	do	2.20	25
26	do	1.37	.2	Mar. 11	do	1.86	12
Oct. 24	do	1.59	1.2	29	H. D. McGlashan	1.79	9.6
Dec. 10	do	1.61	1.9	Apr. 16	F. C. Ebert	1.68	6.3
				May 1	do	1.88	12
1913.				8	do	1.77	7.5
Jan. 14	F. C. Ebert	1.54	1.1	16	do	1.75	7.1
Feb. 10	do	1.62	1.7	June 26	do	1.58	3.6
Mar. 3	do	1.86	3.6	Aug. 13	do	1.50	2.1
Apr. 4	do	1.72	2.1	Sept. 21	do	1.40	1.0

a Measured by weir.

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Daily discharge, in second-feet, of Devil Canyon Creek near San Bernardino, Calif., for 1911–1914.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	.....	2.0	2.4	2.3	a 2.3	2.8	a 4.6	4.2	1.8	a 0.7	0.3	0.75
2	.....	2.1	2.4	a 2.3	a 2.3	a 5.0	4.1	a 4.2	1.8	.6	.3	.87
3	.....	2.1	2.3	a 2.4	a 2.3	a 7.2	a 4.0	4.2	a 1.8	.7	.4	.99
4	.....	2.2	2.6	a 2.5	2.2	9.4	a 3.9	a 4.1	a 1.8	.6	.3	1.2
5	.....	2.2	2.4	2.6	a 2.2	.....	3.9	4.0	a 1.8	.6	.3	1.1
6	.....	2.2	3.0	a 2.5	a 2.2	.....	a 3.9	4.2	a 1.8	.6	a .4	.87
7	.....	2.2	2.9	2.5	a 2.2	.....	3.9	a 4.6	1.8	.6	.4	.87
8	.....	2.3	2.7	a 2.5	a 2.3	.....	3.8	5.0	1.7	.5	a .4	.87
9	.....	2.3	.....	a 2.5	a 2.3	.....	6.9	4.4	1.8	.5	a .3	.87
10	.....	3.8	.....	a 2.5	a 2.3	19	9.7	4.0	1.8	a .4	.3	.59
11	.....	2.6	.....	a 2.5	2.3	9.4	18	3.8	1.8	.4	.4	.75
12	.....	2.3	.....	2.5	a 2.3	16	20	4.0	1.8	.4	a .4	.49
13	.....	2.3	.....	a 2.4	a 2.3	a 14	10	3.8	1.8	.4	.4	a .52
14	.....	2.3	.....	2.3	a 2.3	a 12	11	3.4	1.8	.4	a .4	.54
15	.....	2.2	.....	a 2.3	a 2.2	a 11	11	3.2	a 1.8	.4	.3	.54
16	.....	2.2	.....	a 2.3	a 2.2	a 10	10	2.9	1.8	.4	.3	.49
17	.....	2.2	.....	a 2.3	a 2.2	8.4	9.4	2.6	1.6	.3	.3	.49
18	.....	2.2	.....	a 2.3	2.2	a 6.4	8.4	2.4	1.6	a .3	.3	.49
19	.....	2.2	.....	a 2.3	2.3	4.5	7.8	2.2	1.6	.3	.3	.44
20	.....	2.2	.....	a 2.3	a 2.3	5.3	7.3	2.2	1.5	.4	.3	.44
21	.....	2.3	.....	2.3	a 2.2	a 5.0	6.5	a 2.2	1.5	.4	.08	.44
22	.....	2.4	.....	a 2.3	2.2	a 4.7	5.7	2.2	1.6	.4	.08	.44
23	.....	2.4	.....	a 2.3	a 2.2	a 4.4	5.2	2.1	1.4	.4	.3	.44
24	.....	2.6	.....	a 2.3	a 2.2	4.2	5.0	a 2.1	1.3	.3	.3	.49
25	.....	2.6	.....	a 2.3	2.2	a 4.4	4.8	2.1	1.1	.3	.1	.49
26	.....	2.4	.....	a 2.3	a 2.2	a 4.6	5.7	2.1	1.1	.3	.2	.49
27	.....	2.4	.....	a 2.3	a 2.2	a 4.8	5.2	1.9	1.0	a .3	a .2	.49
28	.....	2.5	.....	2.3	a 2.2	a 5.0	4.8	1.9	.9	.3	.30	.49
29	.....	2.5	.....	a 2.3	2.2	5.2	4.4	1.8	.8	.3	.40	.49
30	.....	2.4	.....	a 2.3	.....	a 5.1	4.2	1.8	.8	.3	a .52	.49
31	.....	.....	.....	a 2.3	.....	5.0	.....	1.8	.....	.3	.65	.....
1913–14.												
1	0.5	.5	1.7	b 2.3	14	b 21	10	16	6	3	1.0	.7
2	.4	1.5	b 1.7	2.1	12	17	10	16	6	3	1.0	.7
3	.2	1.4	1.7	2.1	10	17	10	14	6	3	1.0	.7
4	.2	.7	1.7	2.0	8.5	17	10	14	6	3	.7	.7
5	.3	.75	1.7	1.9	8.5	15	10	12	7.5	2	.7	.7
6	.35	.65	b 1.6	1.7	8.5	15	10	10	7.5	2	1.0	.7
7	.35	.65	1.6	1.7	b 8	15	10	12	8.5	2	1.0	.7
8	.25	.6	b 1.6	1.7	7	b 14	8.5	8.5	8.5	2	1.0	.7
9	.2	.5	1.6	1.7	7	14	8.5	10	6	2	.7	.7
10	.2	.45	1.5	b 1.7	7	14	10	8.5	7.5	2	.7	.7
11	.2	.6	b 1.5	b 1.7	7	12	10	8.5	6	1.5	.7	.7
12	.35	1.0	1.5	b 1.7	7	10	8.5	8.5	5	1.5	.7	.7
13	.35	3.9	b 1.4	1.7	7	10	8.5	8.5	5	1.5	1.0	1.0
14	.25	b 1.5	1.4	b 1.7	7	10	8.5	12	5	2	.7	.7
15	.3	b 1.5	1.4	9.5	7	b 10	7	10	5	1.5	.7	.7
16	.2	b 1.5	b 1.4	11.0	7	10	7	10	5	1.5	.7	.7
17	.2	b 1.5	b 1.4	9.0	b 7	10	7	8.5	4	1.5	.4	.7
18	.2	b 1.5	1.4	50	b 7	b 9	7	7.5	4	1.5	.4	.7
19	.2	b 5.0	1.4	b 30	b 10	8.5	6	8.5	4	2	.7	.7
20	.2	b 3.5	b 1.4	11.0	98	10	6	7.5	4	2	.4	.7
21	.35	b 2.0	1.5	7.0	164	10	7	7.5	4	2	.4	1.0
22	.4	1.8	2.3	6.0	b 90	b 10	8.5	8.5	3	1.5	.7	1.0
23	.45	2.0	b 1.4	5.5	56	10	8.5	7.5	3	1	.7	1.0
24	.5	1.5	2.3	6.5	38	10	8.5	10	3	1	.7	1.0
25	.55	b 1.5	2.1	29	30	10	8.5	8.5	3	1	.7	1.0
26	.55	b 1.5	b 2.5	147	28	10	7	8.5	3	1	.7	1.0
27	b .5	1.5	b 3.0	66	25	10	7	8.5	3	1.5	1.0	1.0
28	b .5	1.5	2.0	30	25	12	8.5	7.5	3	1.5	1.0	1.0
29	b .5	b 1.5	2.0	25	.....	12	19	6	3	1	.7	1.0
30	.5	b 1.5	b 2.5	21	.....	10	16	6	3	.7	1.0	1.0
31	.5	.....	2.5	b 5	.....	10	.....	5	.....	.7	1.0	.....

a Gage not read, discharge interpolated.
b Gage not read, discharge interpolated or estimated by comparison with record of flow on Waterman Canyon Creek.

NOTE.—No record Dec. 9–31, 1911, and Mar. 5–19, 1912.

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Monthly discharge of Devil Canyon Creek near San Bernardino, Calif., for 1911–1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1911–12.					1913–14.				
November	3.8	2.0	2.35	140	October	0.55	0.2	0.34	21
December 1–8	3.0	2.3	2.59	41.1	November	5.0	.45	1.52	90
January	2.6	2.3	2.37	146	December	3.0	1.4	1.76	108
February	2.3	2.2	2.24	129	January	147	1.7	16.3	1,000
April	20	3.8	7.10	422	February	164	7.0	25.4	1,410
May	5.0	1.8	3.08	189	March	21	8.5	12.0	738
June	1.8	.8	1.55	92.2	April	19	6.0	9.03	537
July	.7	.3	.42	25.8	May	16	5.0	9.48	583
August	.65	.08	.32	19.7	June	8.5	3.0	4.92	293
September	1.2	.44	.63	37.5	July	3.0	.7	1.72	106
					August	1.0	.4	.77	47
					September	1.0	.7	.81	48
					The year	164	.2	6.81	4,980

LYTLE CREEK AT MOUTH OF CANYON NEAR RIALTO, CALIF.

Lytle Creek drains the southern slope of the Sierra Madre and discharges its waters upon the plains northwest of San Bernardino. Although it drains a comparatively small area of 54 square miles, at the mouth of the canyon its waters are important for irrigation. Owing to the controversies which have arisen over its diversions, a number of lawsuits for the settlement of the claims have been instituted from time to time. A number of measurements of this stream at the mouth of the canyon from 1892 to 1896, inclusive, are given below. They are copied from court records of proceedings in which the water supply of this creek was involved. These cases were tried in the San Bernardino courts by Judge A. W. McKinley. The measurements were made by A. H. Koebig and G. O. Newman, on weirs, and are believed to be accurate.

Discharge measurements of Lytle Creek at mouth of canyon near Rialto, Calif., for 1892–1896.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
1892.	*Second-feet.*	1894.	*Second-feet*	1896.	*Second-feet.*
June 3	35.58	June 6	17.96	Mar. 3	18.08
Sept. 20	18.70	8	15.50	Apr. 23	19.14
30	22.04	July 10	13.22	24	18.60
Oct. 28	20.64	11	13.22	25	20.52
Nov. 21	22.04	25	13.36	May 3	18.53
27	20.68	Aug. 19	11.44	4	17.26
1893.		25	12.32	10	18.16
Sept. 7	49.20	Oct. 3	16.20	25	15.32
18	49.20	1895.		26	12.84
25	46.34	Sept. 2	56.10		
Oct. 4	45.30	30	40.78		

Beginning in 1894, measurements of Lytle Creek were also made by H. D. Sibley, who was zanjero of the Lytle Creek canals at that time. The measurements were usually made because the discharge of the

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stream was below normal. In the winter and spring only the quantity of water needed for irrigation was turned into the ditches, but later in the summer the entire flow was diverted. These measurements also were made over weirs, and are believed to be fairly accurate. During 1898 trouble was experienced by miners taking the water from the natural channel and turning it into dry channels, sluice boxes, weirs, mill races, etc., thereby causing a loss of from 20 to 25 per cent of the total flow of the creek. Only a portion of these diversions were returned to the creek. The measurements of Mr. Sibley would not show the full flow of the Lytle Creek at all times, and sometimes show less than the full discharge, for the reasons mentioned above. During 1899 the quantity of water which was diverted into the main canal was measured daily by the Anglo-American Canaigre Co., at a weir erected near the head of its cement ditch. The volumes given have been occasionally checked by visiting the canal and making meter measurements. It is believed that during 1899 practically all of the water of the stream was diverted into the canal.

Daily discharge, in second-feet, of Lytle Creek main canal above Rialto, Calif., for 1894–1901.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1894.							1894.						
1			15.5				16	22.6		14.4			
2							17		19.1				
3		24.1	17.2		10.9		18			15.0		13.7	11.5
4							19	22.6			14.1		
5	16.1			10.8			20						
6		22.6					21			14.8	12.7		
7			14.1				22	24.9				11.9	12.7
8	19.9				10.8	13.0	23			14.6			
9							24		18.2	14.9			
10							25	25.4					
11	17.8	18.5	14.3	10.8			26						
12							27			15.0			
13	21.8			13.4			28		16.6				
14			14.3			13.2	29						
15							30						
							31				11.7	13.4	

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Daily discharge, in second-feet, of Lytle Creek main canal above Rialto, Calif., for 1894–1901—Continued.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1894–95.								
1					54.4			
2								
3	13.5							
4					68.0			51.4
5								
6								
7	11.4	14.5						
8				33.9				
9		13.7						
10								48.8
11	13.7							
12								50.8
13								
14								
15								
16							50.4	
17								44.8
18	14.5		26.4	43.8				
19								
20								
21				57.5				
22		12.9						
23			37.4				52.5	
24								47.1
25	14.2							
26							54.4	
27								
28								36.5
29								
30		12.5						
31								

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1895–96.												
1								17.8				13.2
2							22.2		14.1	11.1		
3	36.9											
4												
5				20.0								
6									11.4			12.2
7		30.5									11.5	
8	31.5				19.2					11.1		
9									13.5			
10									12.5			12.2
11		24.9										
12									11.9		10.5	
13			22.0		18.4							
14									12.2	12.2		
15							24.9					
16				21.4				17.1			13.7	10.8
17						19.8						
18	41.9						19.7				11.3	
19												11.8
20										10.5		
21	36.5										12.0	
22	34.1	24.0										
23											12.5	
24							22.4				12.5	
25												
26												11.8
27										10.7		
28	31.5										13.5	
29					17.5							
30								15.0				
31	34.5											

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Daily discharge, in second-feet, of Lytle Creek main canal above Rialto, Calif., for 1894–1901—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Aug.
1896–97.									
1									
2									
3					60.0				
4								36.0	
5	12.2								
6						60.0			
7					24.0				
8									
9	11.6		16.0				50.0	30.0	
10				16.0					
11									
12									10.6
13									
14			16.0			60.0			
15									
16			17.0	24.0				34.0	
17									
18					80.0				
19							60.0		
20									
21					50.0				
22			16.0						
23	11.1								
24							50.0		
25		28.0		20.0		60.0			
26	20.0								
27									
28					56.0	70.0	40.0		
29				28.0					
30			24.0						
31									

Day.	May.	June.	July.	Day.	May.	June.	July.	Day.	May.	June.	July.
1898.				1898.				1898.			
1			10.9	11				21			
2				12				22		11.7	
3				13				23			
4				14				24			
5				15		13.9		25			
6				16				26			
7				17				27			
8				18				28	14.6	9.0	
9				19				29			
10				20		11.5		30			
								31			

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Daily discharge, in second-feet, of Lytle Creek main canal above Rialto, Calif., for 1894–1901—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1899.												
1	11.1	11.8	11.2	9.7	11.2	12.2	6.3	9.4	14.5	10.9	10.5	11.1
2	12.1	12.1	11.1	8.9	10.9	10.4	6.8	10.4	15.1	10.8	10.3	11.3
3	12.1	12.1	11.2	8.5	10.9	9.7	6.4	9.6	16.6	10.8	10.3	11.4
4	11.4	12.4	11.1	12.6	10.5	9.5	6.4	10.7	16.7	10.8	10.6	11.1
5	11.7	12.4	10.8	12.5	10.5	9.4	6.4	12.2	16.0	10.7	10.5	11.3
6	11.6	12.5	10.6	12.1	10.5	9.6	6.4	11.0	16.0	10.6	10.6	11.3
7	11.6	12.6	10.4	11.9	10.5	9.2	6.3	10.8	16.0	10.1	10.6	11.3
8	11.6	12.4	10.4	11.8	10.2	9.0	6.2	11.0	15.9	9.9	9.9	11.6
9	11.6	12.1	10.9	11.7	11.8	.....	6.2	11.0	16.5	10.2	9.9	11.4
10	12.0	11.8	10.6	11.9	9.5	7.2	6.0	8.7	16.1	10.8	10.0	11.5
11	16.1	11.8	10.6	11.7	9.5	7.5	5.9	12.0	16.0	11.7	10.2	11.4
12	13.1	11.8	10.6	11.7	9.2	8.2	6.0	12.0	15.8	[a] 72.1	10.5	11.3
13	12.2	11.8	10.7	11.0	9.6	8.1	5.9	12.2	15.3	12.4	10.9	11.2
14	12.0	11.6	10.7	10.6	9.5	7.8	5.9	12.1	15.4	13.5	11.0	11.1
15	11.9	11.5	10.7	10.6	9.8	.....	6.0	12.3	16.0	12.7	11.3	11.2
16	12.0	11.5	15.3	10.7	9.4	7.6	6.0	12.3	15.5	13.0	11.7	12.9
17	12.0	11.5	14.7	10.6	9.4	7.8	5.8	12.2	15.3	13.0	11.5	11.8
18	12.0	11.3	13.7	10.7	9.4	7.9	5.4	12.6	14.3	12.3	12.0	11.8
19	11.9	11.4	12.3	10.2	9.7	7.7	5.6	13.0	15.7	12.0	11.9	11.6
20	11.8	11.3	13.7	10.8	9.8	7.3	5.6	13.0	14.9	11.4	11.8	11.6
21	11.7	11.3	13.1	9.9	9.5	7.5	5.8	12.5	15.2	11.2	12.2	11.3
22	11.8	11.3	12.9	9.9	9.4	7.6	7.2	12.4	16.1	11.6	12.7	11.1
23	11.7	11.3	12.8	10.3	9.4	7.4	8.6	12.4	10.8	11.9	12.1	11.1
24	11.6	11.8	13.2	10.6	9.2	7.1	9.3	12.5	10.4	10.3	12.0	11.1
25	11.6	11.4	14.8	10.5	9.2	7.2	8.9	12.4	10.3	10.7	13.8	10.9
26	11.6	11.4	13.5	10.4	9.0	7.4	9.2	12.6	10.3	11.4	11.7	11.2
27	11.6	11.3	13.4	10.4	9.0	7.3	9.4	12.5	10.5	11.3	11.5	11.1
28	11.6	11.3	13.6	10.4	9.0	7.2	9.5	12.2	10.5	11.1	11.5	11.1
29	11.6	.....	13.6	11.0	9.4	6.7	9.7	12.3	10.6	11.0	11.4	11.2
30	11.6	.....	13.5	11.2	9.3	6.4	9.6	12.2	10.6	11.4	11.2	11.1
31	11.7	.....	13.5	.....	.....	.....	10.0	12.1	.....	11.3	.....	11.3

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1901.								
1	.....	21.7	14.0	11.3	10.5	9.5	11.0	17.6
2	.....	20.4	15.2	11.6	10.0	9.5	10.8	17.3
3	.....	19.8	14.6	11.3	10.2	9.2	10.8	18.5
4	.....	18.5	14.3	11.1	10.8	9.2	10.8	18.8
5	.....	13.8	13.2	10.5	10.8	9.5	10.8	18.5
6	.....	14.9	13.2	10.2	11.0	9.7	10.5	18.5
7	.....	15.2	13.2	10.5	11.3	9.7	10.5	.....
8	.....	15.1	14.6	10.2	11.3	9.7	12.6	.....
9	.....	14.3	13.2	10.2	11.0	10.0	12.4	.....
10	.....	12.1	12.4	10.0	10.5	9.7	12.1	.....
11	.....	12.7	12.9	9.7	10.2	9.5	11.8	.....
12	.....	13.5	12.7	9.5	10.5	9.5	12.1	.....
13	.....	14.0	12.7	9.5	10.5	9.2	12.4	.....
14	.....	14.3	.....	9.5	10.5	9.2	12.4	.....
15	.....	14.3	12.9	9.5	10.5	9.0	12.6	.....
16	.....	16.1	12.1	9.5	10.2	9.0	13.2	.....
17	.....	16.1	12.1	9.5	10.2	8.7	12.6	.....
18	.....	16.1	12.1	9.5	10.0	9.0	13.2	.....
19	.....	16.1	12.1	8.7	10.0	9.2	13.2	.....
20	.....	16.1	12.4	9.0	10.2	9.5	12.6	.....
21	.....	15.8	12.4	9.5	10.5	9.7	12.6	.....
22	.....	14.9	11.6	9.2	10.8	11.3	13.5	.....
23	.....	14.9	11.8	9.5	10.5	11.5	14.0	.....
24	.....	15.8	12.9	.....	10.5	11.0	14.0	.....
25	.....	18.5	12.7	.....	10.0	10.8	15.8	.....
26	.....	16.7	12.1	.....	10.2	10.5	.....	.....
27	16.1	16.1	11.6	.....	10.2	10.5	.....	.....
28	16.1	16.1	11.0	.....	10.0	10.2	.....	.....
29	16.1	16.1	11.0	.....	10.0	10.8	16.1	.....
30	16.1	16.1	10.5	.....	10.0	11.3	16.1	.....
31	.....	15.2	.....	.....	9.7	.....	15.8	.....

[a] Rain in mountains.

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Monthly discharge of Lytle Creek canals at intake for 1899.

[Drainage area, 54 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1899.						
January	16.07	11.07	11.90	0.220	0.25	732
February	12.60	11.29	11.74	.216	.23	650
March	15.29	10.37	12.23	.226	.26	750
April	12.55	8.47	10.83	.200	.22	643
May	11.78	8.98	9.81	.181	.21	603
June	12.20	6.39	8.14	.150	.17	482
July	10.02	5.41	7.06	.131	.15	437
August	12.60	8.68	11.76	.218	.25	726
September	16.68	10.29	14.30	.265	.30	851
October	72.14	9.85	13.30	.246	.29	818
November	12.69	9.90	11.20	.207	.23	666
December	12.93	10.94	11.30	.209	.24	695
The year						8,050

Monthly discharge of Lytle Creek at headgates of Rialto canals for 1901.

[Drainage area, 52 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1901.						
May	21.7	12.1	15.8	0.30	0.35	971
June	15.2	10.5	12.6	.24	.27	750
July 1-23			10.0	.19	.16	456
August	11.3	9.7	10.4	.20	.23	639
September	11.5	8.7	9.8	.19	.21	583
October 1-25, 29-31			12.7	.24	.25	705

LYTLE CREEK NEAR SAN BERNARDINO, CALIF.

LOCATION.—In NW. ¼ sec. 26, T. 2 N., R. 6 W., at Southern California Edison Co.'s diversion dam, below junction of North and Middle forks of Lytle Creek, in Angeles National Forest, about 3 miles above mouth of canyon, and 14 miles northwest of San Bernardino, San Bernardino County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 2,800 feet above sea level.

RECORDS AVAILABLE.—September 18, 1904, to September 30, 1918.

GAGE.—Watson water-stage recorder in pool above weir in power canal.

DISCHARGE.—Computed by combining flow in power canal with flow over diverting dam; discharge of power canal is measured near intake by an 8-foot steel plate rectangular weir; flow over diverting dam is estimated.

EXTREMES OF DISCHARGE.—1904-1918: Maximum mean daily discharge reported, 4,750 second-feet January 18, 1916; minimum mean daily discharge reported, 5.1 second-feet September 30 and October 3, 1904.

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Daily discharge is mean of two observations recorded each day at 6 a. m. and 6 p. m. Records are good for periods during which total flow of creek is diverted into power canal; for discharges above 23 second-feet (capacity of canal) they are subject to error.

COOPERATION.—Daily discharge record furnished by Southern California Edison Co., through H. W. Dennis, construction engineer.

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918.

Day.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.													
1	.....	5.3	8.0	9.3	12	15	33	50	37	34	29	26	32
2	.....	5.2	8.3	9.6	12	.....	33	49	43	34	29	26	32
3	.....	5.1	8.2	9.8	12	.....	33	48	38	34	28	26	32
4	.....	7.5	8.2	9.8	12	.....	33	48	40	34	28	26	32
5	.....	7.6	8.5	9.6	12	.....	33	48	38	33	28	26	32
6	.....	8.2	8.6	9.7	12	(a)	33	46	38	33	28	26	33
7	.....	8.5	8.8	9.7	11	45	33	46	38	32	28	27	33
8	.....	8.6	8.7	9.7	11	45	32	44	39	32	28	28	34
9	.....	8.8	8.5	9.6	18	40	32	44	38	32	27	28	34
10	.....	8.7	8.4	9.6	15	39	32	44	38	32	27	29	34
11	.....	8.6	8.4	9.6	14	37	33	44	38	32	27	30	35
12	.....	8.6	8.6	9.8	14	36	(a)	42	38	32	27	30	35
13	.....	8.4	8.2	9.6	14	35	.....	42	38	31	26	30	36
14	.....	8.3	8.8	9.6	14	29	.....	42	37	31	26	31	36
15	.....	8.5	8.9	9.6	14	37	(a)	42	37	31	26	31	37
16	.....	8.4	8.6	9.6	16	.....	.....	40	37	31	26	31	37
17	.....	8.4	8.9	9.6	15	58	.....	40	37	31	26	31	38
18	6.8	8.4	8.8	9.6	14	44	.....	40	37	30	26	31	38
19	7.2	8.2	8.5	9.6	14	41	(a)	40	37	30	26	32	38
20	7.2	8.3	8.6	9.6	14	41	75	40	36	30	26	32	38
21	7.0	8.4	8.6	9.6	19	40	70	40	36	30	26	32	39
22	7.7	8.4	8.8	10	18	38	68	40	36	30	25	32	39
23	7.6	8.7	8.8	10	17	37	63	39	36	30	25	32	39
24	9.1	7.7	9.0	10	16	36	58	39	36	30	26	32	39
25	8.0	8.0	9.2	10	16	34	55	39	35	30	26	32	39
26	8.1	7.8	9.2	10	16	33	54	38	35	29	26	32	40
27	7.7	7.8	9.3	10	15	32	53	38	35	29	26	32	39
28	7.6	7.8	9.3	10	16	32	50	38	35	29	26	32	40
29	5.5	7.8	9.1	10	15	.....	55	38	35	29	26	32	39
30	5.1	7.8	9.4	10	15	.....	51	38	34	29	26	32	39
31	.....	8.0	.....	14	15	.....	48	.....	34	.....	26	32	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	39	38	40	27	25	24	.....	65	55	45	51	47
2	39	38	40	27	24	24	.....	64	55	44	51	47
3	39	38	40	26	24	24	.....	65	55	46	51	47
4	39	38	40	25	24	29	.....	64	54	47	51	47
5	38	40	40	24	24	25	.....	62	53	48	51	47
6	38	38	40	24	25	24	.....	63	53	49	51	47
7	38	40	40	24	24	24	.....	62	53	50	51	47
8	38	42	40	24	23	24	.....	62	52	51	51	47
9	38	38	40	24	23	24	.....	60	51	51	51	47
10	38	38	40	24	24	24	.....	59	51	51	51	46
11	38	38	40	24	24	25	.....	59	50	51	51	45
12	38	38	40	25	23	.....	(a)	58	49	53	50	45
13	38	39	40	25	23	.....	71	59	49	53	49	46
14	38	39	40	25	23	.....	73	57	49	53	48	45
15	38	39	40	24	24	.....	72	57	49	55	49	45
16	38	40	32	24	24	.....	72	57	48	55	49	45
17	38	40	32	24	23	.....	71	56	47	57	49	45
18	38	39	31	24	24	.....	70	55	47	57	49	45
19	38	39	31	44	24	.....	69	55	47	57	49	45
20	38	42	30	35	24	.....	68	55	47	56	49	45
21	39	40	30	34	25	.....	68	55	47	55	49	44
22	39	40	29	34	25	.....	67	53	46	55	49	43
23	38	40	29	34	24	.....	67	53	45	55	49	43
24	38	40	29	33	24	.....	67	53	45	55	49	43
25	38	40	28	32	24	.....	67	53	45	54	49	43
26	38	40	28	32	24	.....	65	56	45	53	49	43
27	38	42	28	32	24	.....	66	57	45	53	48	43
28	38	41	28	31	25	.....	68	62	45	53	47	43
29	38	40	28	28	.....	.....	67	59	45	53	47	42
30	38	40	28	26	.....	.....	67	58	45	53	47	43
31	38	.....	27	26	.....	.....	.....	56	.....	53	47	.....

a Discharge over 80 second-feet at time of one daily observation.

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	43	39	38	68	.....	.....	.....	.....	.....	.....	.....	.....
2	41	39	43	68	.....	.....	.....	.....	.....	.....	.....	.....
3	41	39	47	66	.....	.....	.....	.....	.....	.....	.....	(a)
4	41	39	47	66	.....	.....	.....	.....	.....	.....	.....	70
5	41	39	47	70	.....	.....	.....	.....	.....	.....	.....	70
6	41	39	45	67	.....	.....	.....	.....	.....	.....	.....	70
7	41	39	45	74	.....	.....	.....	.....	.....	.....	.....	70
8	41	39	45	72	.....	.....	.....	.....	.....	.....	.....	70
9	41	39	45	(a)	.....	.....	.....	.....	.....	.....	.....	70
10	41	39	45	.....	.....	.....	.....	.....	.....	.....	.....	70
11	41	39	45	.....	.....	.....	.....	.....	.....	.....	.....	70
12	41	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	70
13	41	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	70
14	41	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	70
15	41	37	(a)	.....	.....	.....	.....	.....	.....	.....	.....	70
16	41	37	69	.....	.....	.....	.....	.....	.....	.....	.....	70
17	41	37	69	.....	.....	.....	.....	.....	.....	.....	.....	65
18	40	37	65	.....	.....	.....	.....	.....	.....	.....	.....	60
19	39	37	62	.....	.....	.....	.....	.....	.....	.....	.....	60
20	39	37	62	.....	.....	.....	.....	.....	.....	.....	.....	60
21	39	37	61	.....	.....	.....	.....	.....	.....	.....	.....	60
22	39	37	60	.....	.....	.....	.....	.....	.....	.....	.....	60
23	39	37	60	.....	.....	.....	.....	.....	.....	.....	.....	60
24	39	37	60	.....	.....	.....	.....	.....	.....	.....	.....	60
25	39	37	59	.....	.....	.....	.....	.....	.....	.....	.....	60
26	39	37	65	.....	.....	.....	.....	.....	.....	.....	.....	60
27	39	37	68	.....	.....	.....	.....	.....	.....	.....	.....	60
28	39	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	60
29	39	37	68	.....	.....	.....	.....	.....	.....	.....	.....	60
30	39	37	68	.....	.....	.....	.....	.....	.....	.....	.....	60
31	39	.....	68	.....	.....	.....	.....	.....	.....	.....	.....	.....
1907–8.												
1	60	60	50	40	.....	60	50	50	30	21	20	19
2	60	60	50	40	.....	60	50	50	30	21	20	19
3	60	60	50	40	.....	60	50	50	30	21	20	19
4	60	60	50	40	.....	60	50	50	30	22	20	19
5	60	60	50	40	.....	60	50	50	30	22	20	19
6	60	60	50	40	.....	60	50	50	30	22	(b)	19
7	60	60	50	40	.....	60	50	50	(b)	(b)	20	19
8	60	60	50	40	.....	60	50	50	30	(b)	19	20
9	60	60	50	40	.....	60	50	50	30	21	19	20
10	60	60	50	40	.....	60	50	50	30	21	19	20
11	60	55	50	40	.....	60	50	50	28	21	19	20
12	60	50	50	40	.....	60	50	50	26	21	19	20
13	60	50	50	40	.....	55	50	50	26	21	19	20
14	60	50	50	40	.....	50	50	50	26	21	19	20
15	60	50	45	40	(a)	50	50	50	26	20	19	20
16	60	50	40	40	(a)	50	50	50	26	20	19	21
17	60	50	40	40	60	50	50	50	26	20	19	20
18	60	50	40	40	60	50	50	50	26	21	19	20
19	60	50	40	40	60	50	50	40	26	20	19	21
20	60	50	40	40	60	50	50	40	26	20	19	21
21	60	50	40	40	60	50	50	40	24	20	19	21
22	60	50	40	40	60	50	50	40	23	20	19	21
23	65	50	40	55	60	50	50	40	23	20	19	21
24	60	50	40	.....	60	50	50	40	23	20	19	22
25	60	50	40	.....	60	50	50	40	22	20	19	22
26	60	50	40	.....	60	50	50	40	22	20	19	22
27	60	50	40	.....	60	50	50	40	22	20	19	22
28	60	50	40	.....	60	50	50	40	22	20	19	21
29	60	50	40	.....	60	50	50	30	21	20	19	21
30	60	50	40	.....	.....	50	50	30	21	20	19	21
31	60	.....	40	.....	.....	50	.....	30	.....	20	19	.....

a Discharge over 80 second-feet at time of one daily observation. *b* No record reported.

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	21	22	22	20	30	.....	43	43	43	33	29	37
2	22	22	34	20	43	.....	43	43	37	33	29	37
3	22	22	36	20	43	.....	43	43	37	33	29	37
4	22	22	28	20	43	.....	43	43	37	33	29	37
5	22	22	27	20	43	(a)	43	43	37	33	29	37
6	22	22	27	20	43	60	43	43	37	33	29	37
7	21	22	27	20	(a)	60	43	43	37	33	29	37
8	21	21	27	19	.....	60	43	43	37	33	29	37
9	21	22	26	21	.....	60	43	43	37	31	29	37
10	21	22	27	20	.....	60	43	43	37	29	29	37
11	22	22	26	20	.....	60	43	43	37	29	29	36
12	22	22	26	21	.....	40	43	43	37	29	29	35
13	22	22	26	23	.....	40	43	43	37	29	30	35
14	22	22	26	23	.....	40	43	43	37	29	31	35
15	22	22	26	23	.....	40	43	43	37	29	31	35
16	23	22	26	22	.....	40	43	43	37	29	32	35
17	24	22	26	22	.....	40	43	43	37	29	33	35
18	24	22	25	22	.....	40	43	43	37	29	35	35
19	23	22	24	22	.....	40	43	43	37	29	35	35
20	23	22	23	22	.....	40	43	43	37	29	35	35
21	23	22	22	(a)	.....	50	43	43	37	29	35	35
22	23	22	22	.....	.....	50	43	43	37	29	35	35
23	22	22	22	.....	.....	40	43	43	37	29	35	35
24	23	22	21	.....	.....	43	43	43	37	29	35	35
25	23	22	21	.....	.....	43	43	43	37	31	35	35
26	22	22	21	60	.....	43	43	43	37	29	36	35
27	22	22	21	60	.....	43	43	43	37	29	37	35
28	22	22	21	55	.....	43	43	43	37	29	37	35
29	22	22	20	50	.....	43	43	43	37	29	37	35
30	22	22	20	45	.....	43	43	43	37	29	37	35
31	22	.....	20	35	.....	43	.....	43	.....	29	38	.....
1909–10.												
1	35	33	(b)	.....	61	61	35	31	30	30	30	28
2	35	33	(b)	.....	61	56	34	31	30	30	30	28
3	37	33	33	.....	61	45	34	31	30	30	30	28
4	35	33	33	.....	61	39	33	31	30	30	30	28
5	35	33	33	.....	61	38	33	31	30	30	30	28
6	35	33	33	.....	61	37	33	31	30	30	30	28
7	34	33	33	.....	61	37	33	31	30	30	30	(b)
8	33	33	33	.....	61	37	32	31	30	30	30	28
9	33	37	.....	.....	61	37	33	31	30	30	30	28
10	33	35	47	.....	61	37	33	31	30	30	30	28
11	33	35	38	.....	61	36	33	31	31	30	30	28
12	33	35	(b)	.....	61	35	33	31	30	30	30	27
13	33	35	37	.....	61	35	33	31	30	30	30	27
14	33	39	37	.....	61	35	33	31	30	30	30	27
15	33	37	37	.....	61	35	33	31	30	30	30	27
16	33	37	37	.....	61	35	33	31	30	30	30	27
17	33	37	37	.....	61	35	33	31	29	30	30	27
18	33	34	37	(a)	61	33	33	31	29	30	30	27
19	33	33	37	58	61	35	33	31	29	30	28	27
20	33	33	37	63	61	35	33	31	29	30	28	27
21	33	33	40	63	61	35	33	31	29	30	38	27
22	33	33	37	63	61	35	33	31	30	30	28	27
23	33	33	37	63	61	35	33	31	30	30	28	27
24	33	33	36	63	61	34	33	31	30	30	28	27
25	33	33	35	63	61	33	32	31	30	30	28	27
26	33	35	35	63	61	33	31	31	30	30	28	27
27	33	34	35	63	61	36	31	31	30	30	28	27
28	33	33	35	63	61	39	31	31	30	30	28	27
29	33	33	35	62	.....	37	31	31	30	30	28	27
30	33	33	34	61	.....	35	31	30	23	30	28	27
31	33	.....	.....	61	.....	35	.....	30	.....	30	28	.....

a Discharge over 80 second-feet at time of one daily observation.

b No record reported.

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept
1910-11.												
1	27	24	23	21	43	55	.....	.....	73	46	34	32
2	27	24	23	21	43	55	.....	(a)	73	46	34	32
3	27	24	22	21	43	(a)	.....	73	72	46	34	32
4	27	24	22	21	.....	.....	.....	73	72	46	34	32
5	27	24	22	21	(a)	.....	.....	73	72	42	34	32
6	27	24	22	21	52	.....	.....	73	72	42	34	32
7	27	24	22	21	52	.....	.....	73	72	42	33	32
8	26	24	22	21	53	.....	.....	73	72	42	32	32
9	26	24	22	22	53	.....	.....	73	72	42	32	32
10	26	24	22	.....	53	.....	.....	73	67	42	32	32
11	26	24	22	30	53	.....	.....	73	62	42	32	32
12	26	24	22	32	53	.....	.....	73	62	42	32	32
13	26	24	22	31	53	.....	.....	73	62	40	32	32
14	26	24	22	31	53	.....	.....	73	62	38	32	32
15	26	24	22	.....	53	.....	.....	73	62	38	32	32
16	26	24	22	43	53	.....	.....	73	62	38	32	32
17	26	24	22	38	53	.....	.....	73	62	38	32	32
18	26	24	22	33	53	.....	.....	73	62	38	32	32
19	26	24	22	32	53	.....	.....	73	62	38	32	32
20	26	23	22	32	53	.....	.....	73	62	38	32	32
21	26	23	22	33	53	.....	.....	73	62	38	32	32
22	26	23	22	31	53	.....	.....	73	60	37	32	32
23	26	23	21	29	53	.....	.....	73	58	36	32	32
24	26	23	21	32	53	.....	.....	73	58	36	32	32
25	26	23	21	53	53	.....	.....	73	55	36	32	32
26	26	23	21	43	53	.....	.....	73	52	36	32	32
27	26	23	21	43	53	.....	.....	73	52	36	32	32
28	25	23	21	.....	53	.....	.....	73	52	36	32	33
29	24	23	21	.....	.....	.....	.....	73	52	36	32	38
30	24	23	21	53	.....	.....	.....	73	49	36	32	40
31	24	.....	21	(a)	.....	.....	.....	73	.....	34	32	.....

NOTE.—For days on which no record is given, and not otherwise noted, the discharge was over 80 second-feet.

1911-12.												
1	38	36	30	28	24	21	43	36	29	22	19	17
2	38	34	30	28	24	22	39	36	29	22	19	17
3	38	32	30	28	24	22	35	37	29	22	19	18
4	38	32	30	28	24	24	35	39	28	22	19	18
5	38	32	30	28	24	25	35	39	28	22	18	18
6	38	32	30	28	24	82	35	39	26	22	18	17
7	38	32	30	28	24	52	35	39	26	21	18	17
8	38	32	30	27	24	48	35	39	26	21	18	18
9	38	32	30	26	24	.....	38	39	26	21	18	18
10	38	32	30	26	23	.....	39	39	26	21	18	17
11	38	32	30	26	23	.....	39	39	26	21	17	17
12	38	32	30	26	23	.....	39	39	26	21	17	17
13	38	32	30	26	23	78	39	39	25	21	18	17
14	38	32	30	26	23	78	39	39	25	20	18	17
15	38	31	30	26	22	73	39	39	25	21	18	17
16	38	30	30	26	22	67	39	39	24	21	18	17
17	36	30	30	26	22	58	39	37	24	21	19	17
18	36	30	30	26	22	53	39	35	24	20	18	17
19	36	30	30	26	22	48	39	34	24	20	18	17
20	36	30	30	26	22	48	39	33	22	20	19	17
21	36	30	30	25	22	43	39	33	22	20	18	17
22	36	30	30	24	22	43	39	33	22	20	18	17
23	36	30	30	24	22	43	39	33	22	20	18	17
24	36	30	30	24	22	43	39	33	22	20	18	18
25	36	30	29	24	22	43	39	33	22	20	18	18
26	36	30	28	24	22	43	38	32	22	20	18	18
27	36	30	28	24	22	43	39	31	22	20	18	18
28	36	30	28	24	22	43	39	31	22	20	18	18
29	36	30	28	24	22	43	39	31	22	20	18	18
30	36	30	28	24	.....	43	39	30	22	19	18	18
31	36	.....	28	24	.....	43	.....	29	.....	19	17	.....

a Discharge over 80 second-feet at time of one daily observation.

NOTE.—Discharge interpolated July 23. Discharge above 80 second-feet Mar. 9 to 12.

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	18	22	21	19	19	34	22	22	18	14	9.8	9.5
2	19	22	21	19	20	34	22	22	19	13	9.6	9.3
3	20	22	21	19	20	29	22	22	19	12	9.6	9.0
4	21	22	21	19	19	28	22	22	18	13	9.2	9.0
5	21	22	21	20	19	26	23	21	18	13	9.4	8.2
6	20	22	21	19	20	26	22	21	18	12	9.4	8.2
7	20	22	21	19	20	26	22	21	17	12	9.2	8.5
8	20	22	21	19	24	26	22	21	17	12	9.2	8.4
9	20	23	21	20	22	26	22	20	18	12	9.1	8.0
10	20	23	21	20	22	26	22	20	17	11	9.0	8.0
11	20	22	21	19	22	27	22	20	16	12	8.8	8.0
12	20	23	21	19	22	29	22	20	16	11	8.6	8.2
13	20	22	21	19	22	27	22	20	16	11	8.4	8.2
14	20	22	21	19	22	27	22	20	16	11	8.6	8.2
15	20	22	20	70	22	27	22	20	15	12	8.5	8.0
16	20	22	20	21	22	26	22	19	15	11	8.5	7.8
17	20	22	20	27	22	26	22	19	15	11	8.5	8.0
18	20	22	20	22	21	26	22	20	15	11	8.5	8.0
19	20	21	20	22	21	26	22	20	14	11	8.4	8.2
20	20	21	20	22	21	26	23	20	14	11	8.2	12
21	20	21	20	22	21	26	22	19	14	11	8.2	8.2
22	21	21	20	22	21	25	23	18	13	11	8.7	8.5
23	21	21	21	21	21	25	22	19	13	11	8.0	8.6
24	21	21	20	21	47	24	22	19	14	10	8.1	8.4
25	21	21	20	20	(a)	23	22	20	14	10	8.0	8.4
26	22	21	20	20	47	23	21	19	14	11	8.2	8.4
27	22	21	20	19	38	22	22	20	15	11	8.3	9.0
28	23	21	20	20	35	22	21	19	14	11	8.1	8.5
29	23	21	20	20	.....	22	22	19	14	11	8.2	8.7
30	23	22	20	20	.....	22	22	19	13	11	8.6	8.6
31	23	.....	20	20	.....	21	.....	19	.....	11	9.0	.....

NOTE.—Discharge is mean of two observations daily except for Feb. 7, Mar. 26, and Sept. 3, 1913, when observations were made only in the morning. Discharge interpolated Dec. 4, 1912, and Mar. 14, 1913.

1913–14.												
1	9.1	9.4	15.8	14.4	83	423	73	40	53	43	48	48
2	9.1	10.6	15.2	14.2	83	403	73	40	53	43	48	48
3	9.4	9.9	15.2	14.0	83	333	73	40	53	43	48	47
4	9.4	9.6	15.4	14.0	83	373	73	40	53	43	48	47
5	9.3	9.4	15.4	14.0	83	298	73	40	53	43	48	46
6	9.4	9.5	15.7	14.2	83	223	73	40	53	44	48	46
7	9.1	9.6	15.3	14.2	83	183	73	63	53	45	49	46
8	8.8	9.8	15.3	14.4	83	163	73	63	53	45	48	45
9	9.0	9.5	15.0	14.5	73	142	73	63	53	46	48	44
10	9.0	9.5	14.7	14.2	63	142	73	63	53	46	48	44
11	9.0	10.5	14.4	14.2	63	123	50	63	53	47	48	44
12	8.8	11.7	14.4	14.0	62	112	50	63	53	46	48	44
13	9.1	13.4	14.4	13.9	57	103	50	63	53	46	48	44
14	9.0	12.0	14.4	13.8	53	109	45	63	53	47	49	44
15	9.1	11.7	14.4	33	53	103	40	63	53	49	48	43
16	9.2	11.4	14.2	42	53	103	40	63	53	49	48	42
17	9.1	11.4	14.1	28	53	98	40	63	53	49	48	42
18	9.0	11.1	13.9	1,260	626	93	40	63	53	49	48	42
19	9.0	26	13.9	264	373	93	40	63	50	49	48	42
20	9.0	21	13.9	52	.....	93	40	57	47	49	48	41
21	9.0	18.4	13.8	52	400	92	40	58	47	49	48	40
22	9.2	17.7	18.6	52	1,200	92	40	58	47	49	48	40
23	9.2	17.3	15.4	48	800	92	40	58	47	48	48	40
24	9.0	17.2	14.6	53	400	87	40	58	47	48	48	40
25	9.0	16.6	15.8	113	300	82	40	58	47	48	48	39
26	9.4	16.3	14.8	.....	300	82	40	55	47	48	48	38
27	9.5	15.4	14.8	432	300	82	40	53	47	48	48	38
28	9.4	16.2	14.4	173	300	82	40	53	45	48	48	38
29	9.4	16.0	14.2	103	.....	83	40	53	43	48	48	38
30	9.6	16.3	14.2	83	.....	82	40	53	43	49	48	37
31	9.5	.....	14.4	83	.....	72	.....	53	.....	48	48	.....

a Discharge more than 80 second-feet.

NOTE.—Discharge Nov. 4, Dec. 10, and Mar. 5 interpolated. Floods of Jan. 26 and Feb. 20 extremely severe; no record obtained.

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	36	36	32	33	63	63	47	43	42	42	45	45
2	36	35	32	33	372	63	47	43	42	42	45	45
3	36	34	32	31	82	63	47	43	42	42	45	45
4	36	34	32	31	53	63	47	43	42	42	45	45
5	36	34	32	31	53	63	47	43	42	42	45	45
6	36	34	32	31	53	63	47	43	42	42	45	45
7	36	34	32	31	53	63	47	43	42	42	45	45
8	36	34	32	31	53	63	47	43	42	42	45	45
9	36	34	32	31	343	63	47	43	42	41	45	45
10	36	34	32	31	253	63	47	43	42	42	45	45
11	36	34	32	30	263	63	45	43	42	44	45	45
12	36	34	32	30	93	63	43	43	42	44	45	45
13	36	34	32	30	98	63	43	43	42	44	45	45
14	36	34	32	30	93	63	43	43	42	45	45	45
15	36	34	32	29	78	63	43	43	42	44	45	45
16	36	34	32	27	73	63	43	43	42	44	45	45
17	36	34	47	27	73	63	43	43	42	45	45	45
18	36	34	37	26	73	63	43	43	42	45	45	45
19	36	34	35	25	73	63	43	43	42	45	45	43
20	36	34	37	25	63	47	42	43	42	45	45	42
21	36	34	39	25	63	47	42	43	42	45	45	41
22	36	34	39	27	63	47	42	43	42	45	45	41
23	36	34	39	24	63	47	42	43	42	45	45	41
24	36	33	37	24	63	47	42	43	42	45	45	43
25	36	32	35	30	78	47	42	42	42	44	45	44
26	36	32	35	28	78	47	42	42	42	45	45	44
27	36	32	35	26	58	47	43	42	42	45	45	43
28	36	32	35	43	53	47	43	42	42	45	45	42
29	36	32	35	323	.....	47	43	42	42	45	45	41
30	36	32	34	123	.....	47	43	42	42	45	45	41
31	36	.....	33	83	.....	47	.....	42	.....	45	45	.....
1915–16.												
1	40	32	32	28	350	120	110	90	50	40	36	32
2	40	32	32	43	200	120	110	90	50	40	36	32
3	39	32	32	33	200	110	110	85	50	40	36	32
4	38	32	63	37	180	100	110	80	50	38	36	31
5	38	32	32	38	160	130	110	75	48	38	36	31
6	37	32	32	35	160	120	110	70	46	38	36	30
7	36	32	32	34	160	120	95	75	45	38	36	30
8	36	32	32	32	140	110	95	60	44	38	36	30
9	36	32	32	85	120	100	100	60	44	38	36	30
10	36	32	32	90	120	100	100	60	44	38	36	30
11	36	32	32	55	120	100	100	60	44	38	36	30
12	36	32	32	50	110	100	140	60	44	38	36	30
13	36	32	32	50	100	100	130	59	43	38	36	30
14	36	32	44	55	100	95	120	57	42	38	36	30
15	36	32	33	55	100	90	120	56	42	38	36	30
16	36	32	32	95	100	90	140	56	42	38	36	30
17	36	32	32	3,000	100	90	140	56	42	38	36	30
18	36	32	32	4,750	100	90	140	56	42	38	36	30
19	36	32	32	1,090	100	95	140	56	42	38	36	30
20	35	32	32	1,000	160	120	140	56	42	37	35	30
21	34	32	32	1,000	100	130	140	56	42	36	34	30
22	34	32	30	600	100	140	140	56	42	36	34	30
23	34	32	28	600	100	145	140	56	42	36	34	30
24	34	32	28	600	100	140	140	56	42	36	34	30
25	34	32	28	600	100	140	130	56	42	36	34	30
26	34	32	28	600	160	135	120	56	42	36	34	30
27	34	32	28	4,000	160	125	100	56	40	36	34	30
28	34	32	28	400	110	120	100	56	40	36	34	30
29	34	32	28	400	120	115	100	53	40	36	34	30
30	33	32	28	400	.....	110	95	50	40	36	33	35
31	32	.....	28	400	.....	110	.....	50	.....	36	32	.....

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Daily discharge, in second-feet, of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	38	40	30	40	36	50	32	32	29	22	20	21
2	45	40	30	40	36	50	32	32	28	21	20	21
3	75	40	30	40	34	50	32	22	28	21	20	22
4	65	40	30	40	32	45	32	32	28	21	19	22
5	60	40	30	40	32	40	32	32	28	21	20	22
6	95	40	30	40	31	40	32	32	28	20	20	22
7	65	40	30	40	30	40	32	32	28	20	20	22
8	60	37	30	40	30	38	32	32	28	21	20	22
9	60	34	30	40	30	38	32	28	28	20	20	22
10	60	34	30	40	30	38	32	30	28	20	20	22
11	55	34	30	40	30	40	32	30	28	20	21	22
12	50	34	30	40	30	40	32	30	27	20	21	22
13	50	34	30	36	30	36	32	30	25	20	21	22
14	50	32	30	32	30	36	32	30	24	20	20	22
15	50	32	30	32	30	36	32	30	23	20	20	22
16	50	30	30	40	30	36	36	30	22	20	20	22
17	50	30	30	40	36	36	36	30	22	19	20	22
18	50	30	30	40	41	34	34	30	22	19	19	22
19	50	30	30	45	40	32	32	30	22	18	20	22
20	45	30	30	40	50	32	32	30	21	18	20	22
21	40	30	30	40	55	32	32	30	22	18	20	22
22	40	30	30	40	60	32	32	30	22	18	20	22
23	40	30	32	40	70	32	32	30	22	17	20	22
24	40	30	230	40	55	32	32	30	22	18	20	22
25	40	30	80	40	130	32	32	30	21	17	20	22
26	40	30	55	40	65	30	32	30	22	18	20	22
27	40	30	50	40	55	30	32	30	21	18	20	22
28	40	30	50	38	50	30	32	30	21	18	19	22
29	40	30	50	36	.....	30	33	30	22	20	20	22
30	40	30	40	36	.....	30	32	30	22	20	19	22
31	40	.....	40	36	.....	30	.....	30	.....	20	22	.....
1917–18.												
1	22.1	22.2	22.6	22.2	22.0	32.6	60	34	34	29.8	28.6	28.6
2	22.2	22.2	22.6	21.9	22.0	33.8	60	34	34	29.8	28.6	28.6
3	22.2	22.2	22.4	23.4	22.0	30.8	60	34	34	29.8	28.6	28.6
4	22.2	22.2	22.5	22.2	21.7	28.8	60	34	34	29.8	28.6	28.6
5	22.2	22.2	22.2	22.2	21.6	29.6	55	34	34	29.8	28.6	28.6
6	22.2	22.2	22.2	22.2	21.8	46.5	50	34	34	29.8	28.6	28.6
7	22.2	22.4	22.6	22.1	15.7	62.0	50	34	33	29.8	28.6	28.6
8	22.2	22.2	22.1	22.0	22.2	346	50	34	32	29.8	28.6	28.6
9	22.2	22.2	23.9	22.1	22.5	147	50	34	32	29.8	28.6	28.6
10	22.2	23.5	22.2	21.8	22.4	300	67	34	32	29.4	28.6	28.6
11	22.2	23.7	22.2	22.2	22.1	650	62	34	32	29.0	28.6	28.6
12	22.2	24.1	22.2	22.2	21.8	550	62	34	32	29.0	28.6	28.6
13	22.2	23.4	22.2	19.9	18.6	321	62	34	32	29.0	28.6	28.6
14	22.2	23.4	22.2	22.3	16.3	222	62	34	32	28.8	28.6	28.8
15	22.2	22.8	22.2	22.1	16.2	153	62	34	32	28.6	28.6	28.8
16	22.2	22.8	22.2	22.0	20.0	122	62	34	32	28.6	28.6	29.1
17	22.2	22.2	22.2	22.0	20.0	112	62	62	32	28.6	28.6	28.9
18	22.2	22.4	22.1	22.0	19.5	80	62	34	32	28.6	28.6	28.6
19	22.2	23.0	22.2	21.4	20.3	80	62	34	32	28.6	28.6	28.6
20	22.2	22.8	22.2	20.7	19.3	80	62	34	32	28.6	28.6	28.6
21	22.2	22.8	22.2	21.2	22.6	102	62	34	32	28.6	28.6	28.6
22	22.2	22.6	21.1	21.4	22.2	87	62	34	32	28.6	28.6	28.6
23	22.2	22.6	18.6	21.4	29.7	82	62	34	32	28.6	28.6	28.6
24	22.2	22.8	[a]18.9	20.8	22.6	60	62	34	32	28.6	28.6	28.6
25	22.2	22.7	19.1	21.0	22.8	60	62	34	30	28.6	28.6	28.6
26	22.2	22.8	18.8	19.6	21.8	60	62	34	30	28.6	28.6	28.6
27	22.2	22.6	17.2	21.8	43.4	60	62	34	29.7	28.6	28.6	28.6
28	22.2	22.9	18.8	21.4	39.4	60	62	34	29.7	28.6	28.6	28.6
29	22.2	23.0	22.1	21.4	.....	60	62	34	29.8	28.6	28.6	28.6
30	22.2	23.1	22.2	21.4	.....	60	62	34	29.8	28.6	28.6	28.6
31	22.2	.....	22.2	22.3	.....	60	.....	34	.....	28.6	28.6	.....

[a] Interpolated.

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Monthly discharge of Lytle Creek near San Bernardino, Calif., for 1904–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1904.				
September 18–30	9.1	5.1	7.28	188
1904–5.				
October	8.8	5.1	7.93	488
November	9.4	8.0	8.71	518
December	14	9.3	9.88	608
January	19	11	14.3	879
February 1, 7–15, 16–28	58	15	37.5	1,640
March 1–11, 20–31	75	32	46.1	2,100
April	50	38	42.2	2,510
May	43	34	37.0	2,280
June	34	29	31.1	1,850
July	29	25	26.6	1,640
August	32	26	30.0	1,840
September	40	32	36.3	2,160
1905–6.				
October	39	38	38.2	2,350
November	42	38	39.5	2,350
December	40	27	34.5	2,120
January	44	24	27.9	1,720
February	25	23	24.0	1,330
March 1–11	29	24	24.6	537
April 13–30	73	65	68.6	2,450
May	65	53	58.7	3,610
June	55	45	48.9	2,910
July	57	44	52.3	3,220
August	51	47	49.4	3,040
September	47	42	45.0	2,680
1906–7.				
October	43	39	40.2	2,470
November	39	37	37.8	2,250
December 1–11, 16–27, 29–31	69	38	56.0	2,890
January 1–8	74	66	68.9	1,090
February	(a)	(a)	.....	.....
March	(a)	(a)	.....	.....
April	(a)	(a)	.....	.....
May	(a)	(a)	.....	.....
June	(a)	(a)	.....	.....
July	(a)	(a)	.....	.....
August	(a)	(a)	.....	.....
September 4–30	70	60	65.0	3,480
1907–8.				
October	65	60	60.2	3,700
November	60	50	53.5	3,180
December	50	40	44.7	2,750
January 1–23	55	40	40.7	1,860
February 17–29	60	60	60.0	1,550
March	60	50	54.0	3,320
April	50	50	50.0	2,980
May	50	30	44.8	2,750
June 1–6, 8–30	30	21	26.0	1,500
July 1–6, 9–31	22	20	20.6	1,180
August 1–5, 7–31	20	19	19.2	1,140
September	22	19	20.3	1,210
1908–9.				
October	24	21	22.2	1,360
November	22	21	22.0	1,310
December	36	20	24.7	1,520
January 1–20, 26–31	60	19	27.9	1,440
February 1–6	43	30	40.8	486
March 6–31	60	40	46.3	2,390
April	43	43	43.0	2,560
May	43	43	43.0	2,640
June	43	37	37.2	2,210
July	33	29	30.2	1,860
August	38	29	32.5	2,000
September	37	35	35.7	2,120
1909–10.				
October	37	33	33.5	2,060
November	39	33	34.1	2,030
December 3–8, 10–11, 13–30	47	33	36.1	1,860
January 19–31	63	58	62.2	1,600
February	61	61	61.0	3,390
March	61	33	37.4	2,300
April	35	31	32.7	1,950
May	31	30	30.9	1,900
June	31	23	29.6	1,760
July	30	30	30.0	1,840
August	30	28	29.2	1,800
September 1–6, 8–30	28	27	27.3	1,570
1910–11.				
October	27	24	26.0	1,600
November	24	23	23.6	1,400
December	23	21	21.8	1,340
January 1–9, 11, 14, 16–27, 30	53	21	31.1	1,600
February 1–3, 6–28	53	43	51.8	2,670
March	(a)	55	(a)	.....
April	(a)	(a)	(a)	.....
May 3–31	73	73	73.0	4,200
June	73	49	64.5	3,840
July	46	34	39.5	2,430
August	34	32	32.4	1,990
September	40	32	32.5	1,930
1911–12.				
October	38	36	37.0	2,280
November	36	30	31.2	1,860
December	30	28	29.6	1,820
January	28	24	25.8	1,590
February	24	22	22.8	1,310
April	43	35	38.3	2,280
May	39	29	35.6	2,190
June	29	22	24.6	1,460
July	22	19	20.6	1,270
August	19	17	18.1	1,110
September	18	17	17.4	1,040
1912–13.				
October	23	18	20.6	1,270
November	23	21	21.7	1,290
December	21	20	20.5	1,260
January	70	19	21.9	1,350
March	34	21	25.9	1,590
April	23	21	22.0	1,310
May	22	18	20.0	1,230
June	19	13	15.6	928
July	14	10	11.5	707
August	9.8	8.0	8.71	536
September	12	7.8	8.53	508
1913–14.				
October	9.6	8.8	9.16	563
November	26	9.4	13.5	803
December	18.6	13.8	14.8	910
March	423	72	150	9,220
April	73	40	52.2	3,110
May	63	40	55.7	3,420
June	53	43	50.4	3,000
July	49	43	46.8	2,880
August	49	48	48.1	2,960
September	48	37	42.6	2,530
1914–15.				
October	36	36	36	2,210
November	36	32	33.7	2,010
December	47	32	34.3	2,110

[a] Discharge greater than 80 second-feet.

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Monthly discharge of Lytle Creek near San Bernardino, Calif., for 1904–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1914–15—Con.				
January	323	24	43.5	2,670
February	372	53	103	5,720
March	63	47	56.8	3,490
April	47	42	44.2	2,630
May	43	42	42.8	2,630
June	42	42	42.0	2,500
July	45	41	43.8	2,690
August	45	45	45.0	2,770
September	45	41	43.9	2,610
The year	372	24	47.0	34,900
1915–16.				
October	40	32	35.7	2,200
November	32	32	32.0	1,900
December	63	28	32.2	1,980
January	4,750	28	650	40,000
February	350	100	133	7,650
March	145	90	113	6,950
April	140	95	119	7,080
May	90	50	61.9	3,810
June	50	40	43.6	2,590
July	40	36	37.5	2,310
August	36	32	35.2	2,160
September	35	30	30.4	1,810
The year	4,750	28	111	80,400
1916–17.				
October	95	38	50.4	3,100
November	40	30	33.4	1,990
December	230	30	41.5	2,550
January	45	32	39.1	2,400
February	130	30	43.1	2,390
March	50	30	36.4	2,240
April	36	32	32.4	1,930
May	32	28	30.5	1,880
June	29	21	24.5	1,460
July	22	17	19.5	1,200
August	22	19	20.0	1,230
September	22	21	21.9	1,300
The year	230	17	32.7	23,700
1917–18.				
October	22.2	22.1	22.2	1,370
November	24.1	22.2	22.7	1,350
December	23.9	17.2	21.6	1,330
January	23.4	19.6	21.7	1,330
February	43.4	15.7	22.6	1,300
March	650	28.8	135	8,300
April	67	50	60.1	3,580
May	34	34	34.0	2,090
June	34	29.7	32.0	1,900
July	29.8	28.6	29.0	1,780
August	28.6	28.6	28.6	1,760
September	29.1	28.6	28.6	1,700
The year	650	15.7	38.3	27,800

NOTE.—All tables of monthly discharge computed by U. S. Geological Survey.

SAN JACINTO RIVER NEAR ELSINORE, CALIF.

LOCATION.—Near east line sec. 9, T. 6 S., R. 4 W., about 2¼ miles above junction with Elsinore Lake (low-water stage), one-fourth mile above highway crossing, and 2 miles southeast of Elsinore, Riverside County.

DRAINAGE AREA.—717 square miles (measured on topographic maps); 718 square miles at original gage at railway bridge.

ELEVATION.—About 1,300 feet above sea level.

RECORDS AVAILABLE.—January 1, 1916, to September 30, 1918.

GAGE.—Vertical staff in two sections fastened to trees on right bank about one-fourth mile above highway crossing; installed February 13, 1916. Original gage was a vertical staff fastened to trestle bent of Atchison, Topeka & Santa Fe Railway bridge near left bank about three-fourths of a mile below present site.

DISCHARGE MEASUREMENTS.—Made from railway bridge three-fourths of a mile below gage or by wading.

CHANNEL AND CONTROL.—Gravel and small boulders; fairly permanent. There is but one channel at all stages and high-water banks are clean. January 30, 1916, backwater from Elsinore Lake reached original gage at railway bridge. Present gage is well above influence of backwater.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage recorded, 19.0 feet, on original gage, at 11 a.m. January 28, 1916 (discharge, 14,000 second-feet); no flow for several months each year.

DIVERSIONS.—The Temescal Water Co. diverts water for irrigation above the station. Water is also diverted above San Jacinto for irrigation. Water is pumped from wells in Perris Valley for irrigation.

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REGULATION.—Water is stored for irrigation at Hemet reservoir on South Fork of San Jacinto River.

ACCURACY.—Stage-discharge relation permanent at present site. Rating curve for new gage is well defined; for original gage somewhat approximate as it was determined only by point of zero flow, two medium-stage measurements and maximum discharge computed from cross sections and slope data. Gage usually read to hundredths nearly every day except during low water. Daily discharge ascertained by applying gage height to rating table. For days when gage was not read discharge was interpolated. Records good for medium and low stages; fair for high water.

Discharge measurements of San Jacinto River near Elsinore, Calif., for 1916-1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Jan. 25	F. C. Ebert	a 10.40	680	Feb. 13	F. C. Ebert	1.16	0.9
26	do	a 10.32	651	24	do	1.68	19
Feb. 13	do	3.40	376	Mar. 7	do	2.33	95
24	do	2.97	236	16	do	2.02	47
Mar. 9	do	3.30	349	27	do	1.33	4.7
10	do	3.20	324	Apr. 21	McGlashan and Ebert	1.27	2.7
21	do	2.74	180	May 20	F. C. Ebert	1.09	.4
Apr. 10	do	2.37	115	Dec. 20	do	1.19	.4
28	do	1.83	32				
May. 6	do	1.42	9.3	1918.			
26	McGlashan and Ebert	1.38	5.4	Mar. 5	do	1.17	.6
1917.				17	do	1.98	50
Jan. 17	F. C. Ebert	1.19	1.3	22	do	2.00	51

a Original gage at railroad bridge.

Daily discharge, in second-feet, of San Jacinto River near Elsinore, Calif., for 1916-1918.

Date.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916.											
1			2	a 1,170	315	b 188	21	1.6	0.1	b 0.0	b 1.5
2			2	a 1,120	350	182	14	1.5	.1	b .0	b 1.5
3			2	a 860	350	146	8	1.4	.1	.0	b 1.4
4			2	a 950	350	146	8	1.0	.1	b .0	b 1.4
5			2	a 840	350	146	8	.5	.1	b .0	b 1.3
6			2	a 810	315	136	9	.4	.1	b 0	b 1.3
7			2	a 730	350	136	b 8.5	.4	.1	b .0	1.2
8			2	a 660	425	146	8	.4	.1	.0	b 1.2
9			3	a 640	350	108	8	.4	.1	.0	b 1.2
10			3	a 570	315	99	7	.3	.2	b 2	b 1.2
11			3	a 510	282	94	8.5	b .3	.2	4	b 1.3
12			2	a 430	251	94	9.5	.3	.2	b 5	b 1.3
13			2	387	251	90	9	.3	.3	b 0	1.3
14			2	350	223	94	7.5	.2	.3	b 8	b 1.3
15			2	350	223	92	8	.2	.3	b 9	b 1.2
16			2	315	195	b 87	8	.2	b .3	10	b 1.1
17			730	315	195	82	7.5	.2	.3	b 9	b 1.0
18			830	282	169	74	b 7	.2	b .3	b 8	b .9
19			1,750	251	146	54	7	.2	.3	7	.9
20			6,800	251	158	b 57	6.5	.2	.2	b 5	b .9
21			1,750	251	169	60	6	.2	b .2	3.5	b .9
22			1,010	251	195	48	b 6	b .2	.2	b 3.8	b .9
23			580	251	251	b 46	6.5	.2	b .2	b 4.0	b .9
24			680	223	251	44	6.5	.2	.1	b 4.3	b .9
25			730	223	350	b 39	6	.1	.1	4.6	b .9
26			580	223	332	b 34	6.5	.1	.1	2.6	.9
27			1,010	251	315	29	5	.1	b .1	b 2.4	b .9
28			14,000	251	b 283	32	4.6	.1	.0	b 2.1	b .9
29			6,800	251	251	b 28	4	.1	.0	b 1.8	b .9
30			a 1,750		223	b 25	2.8	.1	.0	1.6	b .9
31			a 1,350		196		b 2.2		.0	b 1.6	

a Estimated, backwater at gage. b Gage not read, discharge interpolated.

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Daily discharge, in second-feet, of San Jacinto River near Elsinore, Calif., for 1916–1918—Continued.

Date.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917.											
1	.....	.....	1.6	2.1	94	a 40	35	1.4	0.4	a 0.3	.....
2	.....	.....	2.1	2.1	84	58	21	a 1.3	a.2	a.2	.....
3	.....	.....	2.1	1.6	80	63	a 12	1.2	.0	.1	.....
4	.....	.....	a 2.2	a 1.5	a 82	27	2.6	.9	a.0	.....	.....
5	.....	.....	a 2.2	1.4	84	25	a 2.0	a 1.0	.0	.....	.....
6	.....	.....	2.3	1.4	84	10	1.4	1.2	.0	.....	.....
7	.....	.....	a 2.2	1.4	94	8	16	a 1.0	.0	.....	.....
8	.....	.....	2.1	1.4	66	a 7.5	3.0	.7	a.0	.....	.....
9	.....	.....	a 1.8	1.4	58	7	a 2.2	a.6	.0	.....	.....
10	.....	.....	1.6	1.4	a 58	3.0	1.4	.4	.0	.....	.....
11	.....	.....	1.6	1.4	58	2.6	a 1.4	.5	a.0	.....	.....
12	.....	.....	2.6	1.4	58	1.6	1.4	.4	a.0	.....	.....
13	.....	.....	2.1	1.4	58	1.6	a 1.1	a.3	a.0	.....	.....
14	.....	.....	a 2.4	1.2	58	6.5	a.8	a.3	a.0	.....	.....
15	.....	.....	2.6	1.4	a 56	a 12	.5	.2	a.0	.....	.....
16	.....	.....	a 2.0	1.2	53	17	.5	a.1	a.0	.....	.....
17	.....	.....	1.5	a 2.9	a 49	16	a.4	.0	a.0	.....	.....
18	.....	.....	2.6	4.6	a 45	6	.4	a.0	a.0	.....	.....
19	.....	.....	15	6.5	42	10	.4	.0	a.0	.....	.....
20	.....	.....	10	11	40	3.5	.5	a.0	a.0	.....	.....
21	.....	.....	a 15	11	38	6.5	.5	.0	a.0	.....	.....
22	.....	.....	20	11	36	4.6	.5	.4	a.0	.....	.....
23	.....	.....	15	15	35	a 7	.5	a.4	a.0	.....	.....
24	.....	.....	10	30	33	9.5	a.6	.4	a.0	.....	.....
25	.....	.....	6.5	a 74	a 19	9.5	a.6	a.4	a.0	.....	.....
26	.....	.....	4.6	119	5	a 8	.7	.3	a.0	.....	.....
27	.....	.....	3.5	126	4.6	7	.2	.2	a.0	.....	.....
28	.....	.....	a 3.5	a 110	4.0	8	.2	a.4	.6	.....	.....
29	.....	.....	3.5	.....	5	a 20	.9	.7	a 3.4	.....	.....
30	.....	.....	2.6	.....	2.6	32	a 1.2	a.6	.7	.....	.....
31	.....	.....	2.1	.....	a 20	.....	1.6	.....	.4	.....	.....
1917–18:											
1	.....	0.3	1.2	1.6	1.2	0.5	b 0.2	0.2	.....	.....	.....
2	.....	b.4	b 1.2	1.6	1.2	.4	.2	.2	.....	.....	.....
3	.....	.4	1.2	b 1.5	b.8	.4	.2	.2	.....	.....	.....
4	.....	.4	b 1.3	b 1.3	.4	b.4	b.2	.2	.....	.....	.....
5	.....	.4	1.4	1.2	.4	.4	b.2	.2	.....	.....	.....
6	.....	.4	b 1.4	1.2	c 2.0	b.4	.2	.2	.....	.....	.....
7	.....	b.4	1.4	1.6	c 4.0	.4	b.2	.1	.....	.....	.....
8	.....	.4	1.4	b 1.5	6.5	b.4	.2	.1	.....	.....	.....
9	.....	b.4	b 1.4	1.4	c 20	.3	.2	.....	.....	.....	.....
10	.....	.4	1.4	b 1.5	c 40	b.2	.2	.....	.....	.....	.....
11	.....	.5	1.6	1.6	61	.2	b.2	.....	.....	.....	.....
12	.....	b.5	b 1.3	1.6	750	b.2	b.2	.....	.....	.....	.....
13	0.2	.5	b 1.0	b 1.6	750	.2	b.2	.....	.....	.....	.....
14	b.2	.5	.7	1.6	705	.2	.2	.....	.....	.....	.....
15	.2	b.5	.5	b 1.6	266	b.2	.2	.....	.....	.....	.....
16	.2	b.6	.6	1.6	158	.2	.2	.....	.....	.....	.....
17	b.2	b.7	.5	b 3.3	49	b.4	b.2	.....	.....	.....	.....
18	b.2	.7	b.5	5	31	.6	b.2	.....	.....	.....	.....
19	.2	b.7	.5	b 3.5	b 141	b.4	b.2	.....	.....	.....	.....
20	b.2	.7	b.5	2.1	251	.3	.2	.....	.....	.....	.....
21	.3	.7	b.6	1.6	146	.3	.2	.....	.....	.....	.....
22	b.3	.7	.6	b 1.6	51	.2	.2	.....	.....	.....	.....
23	.3	.7	b.6	1.6	47	b.2	b.2	.....	.....	.....	.....
24	b.3	b 1.0	.6	b 1.6	46	.2	.2	.....	.....	.....	.....
25	.3	1.2	.7	1.6	b 27	b.2	b.2	.....	.....	.....	.....
26	b.3	1.2	2.1	1.6	8.5	.2	.2	.....	.....	.....	.....
27	.3	1.2	b 2.1	b 1.5	6.5	b.2	b.2	.....	.....	.....	.....
28	b.3	b 1.2	b 2.1	b 1.3	b 3.6	.2	.2	.....	.....	.....	.....
29	.3	1.2	2.1	.....	.7	b.2	.2	.....	.....	.....	.....
30	b.3	1.2	1.6	.....	b.6	.2	b.2	.....	.....	.....	.....
31	.....	1.2	1.2	.....	c.5	.....	b.2	.....	.....	.....	.....

a Gage not read, discharge interpolated. b Interpolated. c Estimated.

NOTE.—River dry on all days for which no discharge is given.

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Monthly discharge of San Jacinto River near Elsinore, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1916.				
January	14,000	2	1,300	79,900
February	1,170	223	482	27,700
March	425	146	270	16,600
April	188	25	87.9	5,230
May	21	2.2	7.55	464
June	1.6	.1	.39	23
July	.3	.0	.15	9
August	10	.0	3.40	209
September	1.5	.9	1.11	66
The period	.....	.....	.....	130,000
1916–17.				
January	20	1.5	4.80	295
February	126	1.2	19.5	1,080
March	94	2.6	48.5	2,980
April	63	1.6	14.6	869
May	35	.2	3.60	221
June	1.4	.0	.510	30.3
July	6	.0	.358	22.0
August	.3	.0	.019	1.2
The year	126	0.0	7.60	5,500
1917–18.				
November	.3	.0	.15	8.9
December	1.2	.3	.69	42.4
January	2.1	.5	1.14	70.1
February	5	1.2	1.80	100
March	750	.4	115	7,070
April	.6	.2	.29	17.3
May	.2	.2	.20	12.3
June	.2	.0	.05	3.0
The year	750	.0	10.2	7,220

NOTE.—No flow in months for which record is not given.

ELSINORE LAKE AT ELSINORE, CALIF.

LOCATION.—A short distance southeast of outlet, at Elsinore, Riverside County.

RECORDS AVAILABLE.—December 1, 1915, to September 30, 1918.

GAGE.—Vertical staff in several sections on northeast shore of lake, a short distance above outlet. The temporary staff, read January 31 to February 13, 1916, was destroyed before it could be referred to gage datum. May 10, 1918, gage datum was raised 0.06 foot. Add 1,200 feet, to published elevations, to reduce to mean sea level.

HISTORY.[1]—Apparently the earliest specific reference to the amount of water in Elsinore Lake is contained in the notes of a traveler through southern California about 1810, who mentions "Laguna Grande," the original Mexican name for the lake, as being little more than a swamp about a mile long. For the period between that time and 1862 data as to its rise and fall are not available, but in 1862 it was very high and probably overflowed. During the succeeding dry period, especially during the years 1866 and 1867, when practically no rain fell on the drainage area tributary to the lake, it receded very rapidly, but was full again in 1872 and overflowed down its outlet through Temescal Canyon. After this it again evaporated to a level probably as low as it has ever been since, but the great rains of the winter of 1883–84 filled it to overflowing in three weeks.

[1] Prepared by Francis R. Schanck, assistant inspector of irrigation, United States Indian Service, Los Angeles, Calif.

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Americans had settled around it by this time and their descriptions of conditions say that large willow trees surrounding the low-water shore line were of such size that they must have been 30 or more years old. The rainfall in the next 10 years was excessive, and the lake stayed high and overflowed naturally during three or four years of the decade. It was purchased by the Temescal Water Co. for the irrigation of lands at Corona, Calif., and its outlet channel was deepened, permitting gravity flow to Corona for a year or more after the lake level had sunk below the elevation of its outlet. As the surface still receded a pumping plant was installed and the water was raised a maximum of about 10 feet and then flowed down the natural channel of Temescal Canyon. Pumping was continued a couple of seasons, but the concentration of salts in the lake, due to the evaporation and low rainfall, soon made the water unfit for irrigation.

After 1893 the level sank almost continuously for nearly 10 years, with, of course, a slight rise every winter. The heavier precipitation beginning in 1903, gradually filled the lake about half the depth between its minimum level since 1883 and its high level or overflow point. The flood of January, 1916, rapidly raised the level to overflowing, although the run-off from its drainage area into the lake appears to have been considerably less than that of the wet years of 1883–84 and 1888–89.

The fact that large trees were growing 20 feet or more below the high-water level when the lake filled in 1883–84 indicates that the high water of the sixties and seventies must have been of very short duration. The stumps of the trees were still visible in 1888 and 1889 many hundred feet from shore, but by the time the lake receded in the middle nineties these had disappeared.

Daily elevations, in feet, of Elsinore Lake at Elsinore, Calif., for 1915–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1			45.2	45.4	a22.2	64.5		64.5		62.6		61.2
2				45.3	a22.5	64.5	65.5		63.4	62.5	61.7	
3			45.2	45.3	a22.8	64.6	65.5	64.5	63.4	62.5	61.6	
4				45.3	a23.0	64.7	65.5	64.4	63.3	62.5		
5				45.3	a23.3	64.8	65.5	64.4	63.3	62.5	61.6	61.0
6			45.2	45.3	a23.5	64.9	65.5	64.3	63.3			
7				45.3	a23.5	65.0	65.4	64.3	63.2	62.4	61.6	61.0
8				45.3	a23.7	65.1	65.4	64.2	63.2	62.4		
9				45.4	a23.9	65.2	65.3	64.2		62.4		
10			45.2	45.4	a24.1	65.2	65.3	64.2	63.2	62.4	61.5	
11				45.4	a24.2	65.3		64.2	63.2	62.4	61.4	
12				45.4	a24.4	65.3	65.3	64.1		62.0	61.4	
13			45.2	45.4	a24.5	65.3		64.1	63.1			
14				45.4	63.5	65.3		64.0			61.4	
15				45.4	63.6	65.3	65.5	64.0	63.0	62.0		60.8
16			45.2	45.4	63.9	65.3	65.2	64.0	63.0		61.4	
17			45.2	46.7	63.9	65.2		63.9				
18				47.2	63.8	65.3	65.1	64.0	62.9	62.0		60.8
19				46.7	63.9	65.3	65.1	63.9	62.9		61.3	
20			45.2	50.2	63.9	65.6	65.0		63.9	62.9		
21				51.2	63.9	65.6	65.0	63.8	62.8		61.3	
22				52.2	64.0	65.6	65.0		62.8	61.9		60.8
23				52.7	64.1	65.6	64.9	63.6	62.8		61.3	
24			45.2	52.9	64.2	65.6	64.7		62.8	61.9		
25				53.2	64.2	65.6	64.7	63.6			61.3	
26				54.0	64.3	65.5	64.6		62.7			60.8
27				54.5	64.3	65.5	64.6	63.6	62.7	61.8		
28				55.5	64.3	65.5	64.6	63.5	62.7		61.2	
29				57.5	64.4	65.5	64.6		62.6	61.8		60.6
30			45.3	58.5		65.5	64.5	63.5	62.6			
31			45.3	a22.0		65.5		63.4				

a Temporary gage, not reliable.

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Daily elevations, in feet, of Elsinore Lake at Elsinore, Calif., for 1915–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	60.6			60.2	60.4						59.6	
2		60.4	60.0					60.5	60.0	59.7		
3						60.6	60.7		60.0			
4		60.4	60.0					60.5			59.6	
5						60.6				59.7		
6	60.6			60.2	60.4		60.6					
7						60.7				59.6		
8		60.4		60.2		60.8		60.4	59.8		59.6	
9			60.0				60.6			59.6		
10	60.6				60.3			60.4				
11		60.2									59.6	
12			60.0	60.2		60.8	60.6	60.4	59.8			
13	60.6						60.7					
14					60.3	60.8		60.4	59.8		59.6	
15		60.2	60.0	60.2						59.6		
16					60.3	60.8			59.8			
17	60.7						60.7			59.6		
18		60.2	60.0		60.4				59.8			
19				60.4				60.3				
20	60.6			60.4	60.4	60.8	60.6					
21		60.2							59.8	59.6		
22			60.0			60.8	60.6	60.2				
23					60.5					59.6		
24		60.0		60.4		60.8		60.0				
25	60.4		60.0			60.8	60.6					
26	60.4				60.6			60.2				
27		60.0		60.4		60.8	60.6	60.2	59.7			
28	60.4									59.6		
29			60.2	60.4				60.0	59.7			
30							60.6					
31						60.8		60.0				
1917–18.												
1				57.1	57.0			58.2	57.8			
2											56.6	
3				57.1			58.5					
4					57.0			58.2	57.7	57.2		
5				57.1		57.2	58.6		57.7			56.0
6										57.2	56.5	
7					57.0				57.7	57.2		55.9
8				57.1			58.6	58.2				
9					57.0	57.4				57.2	56.5	
10							58.5	58.2	57.6	57.2		55.9
11				57.0	57.0	57.2						
12							58.5			57.0	56.4	
13						58.0		58.1				55.8
14					57.0		58.4					
15				57.1					57.6			
16					57.0	58.2				57.0	56.4	
17					57.0	58.4		58.0				55.8
18									57.5			
19				57.0			58.4	57.9		56.9	56.2	
20			57.2		57.0							
21				57.0					57.5	56.9		55.7
22						58.6					56.2	
23					57.1	58.6	58.3					
24												55.6
25					57.2	58.7		57.9	57.4	56.8		
26			57.2	57.1			58.3					55.5
27						58.7					56.1	
28				57.0	57.2			57.8				
29			57.1					57.8	57.3	56.7		
30			57.1	57.0		58.8					56.1	
31												

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TEMESCAL CREEK NEAR ELSINORE, CALIF.

LOCATION.—In La Laguna grant at private bridge 1¼ miles northwest of Elsinore, Riverside County, and 2 miles below outlet of Elsinore Lake.

DRAINAGE AREA.—Not measured. Elsinore Lake overflows only during years of heavy rainfall.

ELEVATION.—About 1,250 feet above sea level.

RECORDS AVAILABLE.—April 10, 1916, to September 30, 1918.

GAGE.—Vertical staff fastened to left bridge abutment near downstream end.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Sand; not permanent. Banks are high and not subject to overflow. About January 20, 1917, the channel at outlet was deepened, permitting more water to leave Elsinore Lake. March 8 to June 30, 1917, weeds and moss were growing in channel.

DIVERSIONS.—See San Jacinto River near Elsinore. Water is pumped from wells in Perris Valley for irrigation.

REGULATION.—Water is stored in Hemet reservoir on South Fork of San Jacinto River.

ACCURACY.—Stage-discharge permanent during 1916 but not in 1917 on account of growth of weeds and moss in channel. Well-defined rating curve used April 10, 1916, to March 7, 1917. Gage read to hundredths, but not every day. Daily discharge before March 7, 1917, ascertained by applying gage height to rating table; after March 7, by shifting-control method. Results for 1916, good; 1917, fair. No flow during 1918.

Discharge measurements of Temescal Creek at Elsinore, Calif., for 1916–17.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1916.		*Feet.*	*Sec.-ft.*
Feb. 13	F. C. Ebert		[a] 48	Aug. 10	F. C. Ebert	.81	3.2
24	do		71	Dec. 7	do	.79	2.4
Mar. 9	McGlashan and Ebert		[b] 143				
22	F. C. Ebert		179	1917.			
Apr. 10	do	3.90	170	Jan. 17	F. C. Ebert	.50	[c] .2
28	do	3.31	126	Feb. 13	do	1.04	6.0
May 6	do	2.82	99	Mar. 7	do	1.20	11
26	McGlashan and Ebert	1.99	52	16	do	1.43	13
June 9	F. C. Ebert	1.75	42	26	do	1.51	13
July 11	do	1.29	20	Apr. 21	McGlashan and Ebert	1.56	9.1
20	do	1.19	16	May 20	F. C. Ebert	1.28	3.5

[a] Measured 1,000 feet below Lake Elsinore.
[b] Measured 1 mile below Lake Elsinore.
[c] Estimated.

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Daily discharge, in second-feet, of Temescal Creek near Elsinore, Calif., for 1916–17.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916.												
1								113	45	a 22	a 10	a 0.2
2								112	44	21	9.5	.1
3								112	44	20	9.0	a .2
4								106	43	21	8.0	.4
5								104	42	21	7.0	.4
6								102	41	21	4.9	.4
7								a 93	41	20	a 4.5	.2
8								84	40	23	a 4.0	.2
9						143		82	40	a 22	3.5	.2
10							167	82	40	20	3.0	a .2
11							a 166	84	38	20	a 2.6	a .2
12							166	75	a 38	19	2.2	.2
13					48		159	73	37	19	a 2.0	.2
14							159	72	37	18	1.7	.2
15							159	69	36	17	a 1.4	.3
16							a 154	a 68	35	a 17	1.2	.3
17							150	67	34	17	1.1	a .3
18							148	63	32	17	1.0	.3
19							146	a 62	31	17	.7	.3
20							142	61	30	17	4.1	.3
21							139	60	29	16	a 2.2	.3
22						179	139	a 58	28	15	.3	.3
23							140	56	28	a 15	.3	.3
24					71		138	54	27	15	.3	a .3
25							136	a 54	26	15	.3	.3
26							135	53	25	15	.3	.3
27							129	53	25	13	.2	.3
28							129	50	24	a 12	.2	a .3
29							128	49	23	12	.2	.3
30							a 120	48	22	a 11	.2	.3
31								46		a 10	.2	
1916–17.												
1	a 0.4	3.1	2.8	.3	6.5	10	a 12	8.5	.8			
2	.4	3.1	2.8	.3	6.5	a 10	11	a 8	a .9			
3	.4	4.0	a 3.0	.3	a 6.5	10	11	8	a 1.1			
4	.4	4.0	3.1	.3	a 6.5	9.5	11	a 8	1.2			
5	.4	a 4.2	3.1	.2	6.5	a 10	11	8	.8			
6	.4	4.3	3.1	.2	6.5	11	a 11	a 8	.5			
7	a .4	4.3	2.3	a .2	6.5	11	11	8	a .4			
8	a .4	3.4	2.3	.2	6	12	a 11	8	.2			
9	.4	3.4	2.3	.2	6	a 12	11	7	a .2			
10	.4	a 3.2	a 2.2	.2	6	13	11	7	a .2			
11	a .4	3.1	2.1	.2	a 6	13	11	a 7	.2			
12	.4	a 3.2	2.1	.2	a 6	13	11	6.5	.3			
13	.5	a 3.3	2.1	.3	6	12	11	6.5	a .3			
14	.5	3.4	2.1	a .3	6	12	a 10	a 6	.3			
15	a .5	4.0	2.1	.3	6	12	a 10	6	.3			
16	.5	4.0	2.1	.3	a 7	13	10	5.5	.4			
17	.5	4.0	a 2.0	.2	7.5	13	10	5	a .4			
18	.5	4.0	1.8	.3	7.5	a 14	10	a 5	a .3			
19	.7	4.4	1.8	a 3.4	a 7.5	14	9	5	.3			
20	.8	4.0	1.6	6.5	7.5	14	a 9	3.5	.2			
21	.9	4.3	1.6	a 6.5	7.5	a 14	9	3.0	a .2			
22	a 2.0	4.3	.8	6.5	a 8	13	a 9	2.5	.3			
23	3.1	3.7	1.0	6.5	8.5	13	9	2.5	.2			
24	3.7	3.7	a .9	6.5	8.5	13	9	a 2.5	a .2			
25	5	3.7	.8	6.5	a 9	a 13	a 9	2.5	.2			
26	5	a 3.5	.2	6.5	9.5	13	9.5	a 2.4	.1			
27	5	a 3.3	.2	6.5	9.5	13	10	a 2.2	a .1			
28	4.9	3.1	.2	a 6.5	10	13	a 10	2.0	.1			
29	a 4.8	3.2	.2	6.5		13	a 9	a 1.5	a .1			
30	4.6	2.8	.2	6.5		13	9	1.0	.1			
31	4.6		a .2	6.5		a 12		.8				

a Gage not read, discharge interpolated.

NOTE.—No flow July 1, 1917, to Sept. 30, 1918.

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Monthly discharge of Temescal Creek near Elsinore, Calif., for 1916–17.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916.					**1916–17.**				
April 10–30	167	120	145	6,040	December	3.1	.2	1.71	105
May	113	46	73.1	4,490	January	6.5	.2	2.77	170
June	45	22	34.2	2,040	February	10	6	7.18	399
July	23	10	17.4	1,070	March	14	9.5	12.3	756
August	10	.2	2.78	171	April	12	9	10.2	607
September	.4	.1	.27	16	May	8.5	.8	5.08	312
					June	1.2	.1	.363	21.6
The period				13,800	July	.0	.0	.00	.0
					August	.0	.0	.00	.0
1916–17.					September	.0	.0	.00	.0
October	5	.4	1.71	105					
November	4.1	2.8	3.67	218	The year	14	.0	3.72	2,690

NOTE.—No flow during year 1917–18.

TEMESCAL CREEK NEAR RINCON, CALIF.

Temescal Creek rises in the extreme southwest corner of Riverside County, flows in a general northerly direction, and enters Santa Ana River 2½ miles above Rincon and just above the lower narrows of the Santa Ana. Its smaller tributaries have their sources on the eastern slope of the Santa Ana Mountains. San Jacinto River discharges into Lake Elsinore. During years of heavy rainfall this lake overflows and the surplus water finds its way into Temescal Creek. The water of Temescal Creek and of its tributary, Coldwater Creek, is used for irrigation in the vicinity of Corona. A series of measurements of Temescal and Coldwater creeks have been made by F. Rolfe and are given below.

During the dry years covered by the following measurements, there was no surface flow of Temescal Creek. The water flowing in the upper pipe line of the Temescal Land & Water Co. includes the principal part of the flow of Coldwater Creek and Temescal Hot Springs, augmented by water pumped from wells in Temescal Valley.

Discharge measurements of Temescal Creek at upper pipe line, Temescal Land & Water Co., Temescal, Riverside County, Calif., for 1899.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
		Sec.-feet.			*Sec.-feet.*
Jan. 4	S. G. Bennett	0.99	Apr. 29	F. Rolfe	3.22
27	F. Rolfe	.74	May 6	do	2.80
Feb. 4	do	1.62	13	do	4.02
11	do	.87	18	do	4.21
18	do	3.67	30	do	4.01
24	do	3.37	June 9	do	3.36
Mar. 3	do	3.87	16	do	3.52
12	do	5.10	July 10	do	3.21
16	do	3.56	19	do	3.20
25	do	3.74	25	do	3.67
31	do	4.16	Aug. 11	do	1.48
Apr. 14	do	2.93	11	do	4.26
22	do	3.71	21	do	3.84

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Discharge measurements of Temescal Creek at lower pipe line, Temescal Land & Water Co., Temescal, Riverside County, Calif., for 1899.

[Made by F. Rolfe.]

Date.		Discharge.	Date.		Discharge.	Date.		Discharge.
		Sec.-feet.			*Sec.-feet.*			*Sec.-feet.*
Jan.	28	0.66	Mar.	25	2.91	June	9	3.10
Feb.	1	.00		31	3.42		15	2.36
	11	.31	Apr.	14	.89	July	4	2.87
	15	1.39		22	2.28		19	2.03
	20	1.56		29	2.28		25	2.49
Mar.	4	4.22	May	6	4.46	Aug.	5	1.12
	12	3.55		13	2.55		11	2.40
	18	2.69		30	3.08		21	2.65

COLDWATER CREEK.

Discharge measurements of Coldwater Creek, Riverside County, one-fifth mile above dam, for 1899.

[Made by F. Rolfe.]

Date.		Discharge.	Date.		Discharge.	Date.		Discharge.
		Sec.-feet.			*Sec.-feet.*			*Sec.-feet.*
Jan.	4	0.82	Mar.	12	0.71	May	5	0.37
	18	1.43		17	1.60		13	.21
	27	.84		25	1.18		17	.21
Feb.	3	.99		31	.84		29	.27
	11	.97	Apr.	14	0.68		31	.36
	18	.78		15	.62		31	.30
	24	.94		21	.26	June	5	.30
Mar.	1	.92		26	.38		7	.22

SAN ANTONIO CREEK NEAR CLAREMONT, CALIF.

LOCATION.—In NW. ¼ SE. ¼ sec. 36, T. 2 N., R. 8 W., at highway bridge about half a mile above Southern California Edison Co.'s power house (Sierra plant), about 4 miles above mouth of canyon, and 8 miles northeast of Claremont, Los Angeles County.

DRAINAGE AREA.—16.9 square miles (measured on topographic map.)

ELEVATION.—About 3,200 feet above sea level.

RECORDS AVAILABLE.—January 25, 1917, to September 30, 1918. (Discharge measurements only May 31 to September 4, 1916.)

GAGE.—Gurley graph water-stage recorder on left bank at north end of highway bridge.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading near gage.

CHANNEL AND CONTROL.—Coarse gravel and small boulders; shifting during high stages. One channel except at extremely high floods when left bank is overflowed.

EXTREMES OF DISCHARGE.—1917–1918: Maximum stage recorded from water-stage recorder, 4.00 feet at 3 p. m. March 7, 1918 (discharge, 362 second-feet); minimum stage recorded from water-stage recorder, 0.93 foot at 4 p. m., August 26, 1918 (discharge, 0.5 second-foot).

DIVERSIONS.—The Southern California Edison Co. diverts water for power development above the station. (See record, p. 346.)

REGULATION.—None, except as indicated above.

ACCURACY.—Stage-discharge relation not permanent during period. Rating curves fairly well defined. The operation of the water-stage recorder was satisfactory during the period. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph. Records good.

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COOPERATION.—Southern California Edison Co. furnished observer for water-stage recorder.

Cucamonga and San Antonio creeks rise in the San Antonio Mountains, Sierra Madre, and flow southward into the Santa Ana Valley, where they are lost in the sand.

Discharge measurements of San Antonio Creek near Claremont, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec-ft.*	1917.		*Feet.*	*Sec.-ft.*
May 31	J. C. Dort		14	Sept. 18	H. J. Tompkins	0.52	0.6
June 13	do		7.7	Oct. 25	do	.56	.6
27	H. J. Tompkins		4.4	Dec. 15	do	.58	.7
July 3	J. C. Dort		3.4				
19	H. J. Tompkins		1.0	1918.	H. J. Tompkins	.72	2.7
Aug. 12	do		1.0	Mar. 9	C. W. Sopp	2.47	68
Sept. 4	J. C. Dort		.8	9	H. J. Tompkins	2.02	39
Oct. 11	do		1.8	14	do	3.14	165
				21	F. C. Ebert	2.39	68
1917.				30	H. J. Tompkins	2.08	39
Feb. 19	H. J. Tompkins	0.69	2.1	Apr. 4	C. W. Sopp	2.06	41
24	do	.84	4.5	11	H. J. Tompkins	1.90	35
Mar. 8	Dort and Tompkins	.94	5.2	18	C. W. Sopp	1.82	28
30	J. C. Dort	1.38	17	May 8	H. J. Tompkins	1.73	19
Apr. 5	H. J. Tompkins	1.48	20	14	do	1.60	15
10	do	1.53	25	23	C. W. Sopp	1.48	11
21	J. C. Dort	1.36	15	June 1	H. J. Tompkins	1.34	5.8
May 2	H. J. Tompkins	1.40	18	21	do	1.04	1.8
9	do	1.40	19	July 19	C. W. Sopp	.98	.85
26	do	1.19	12	Aug. 25	H. J. Tompkins	.94	.7
July 19	Tompkins and Campbell	.56	1.0	Sept. 18	F. C. Ebert	.96	.6
Aug. 28	H. J. Tompkins	.52	.6				

Daily discharge, in second-feet, of San Antonio Creek near Claremont, Calif., for 1917–18.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917.												
1					2.3	6.5	20	22	8	1.8	1.2	0.9
2					2.3	6.5	20	20	8	1.8	1.1	.9
3					2.3	6.5	21	19	8.5	1.5	1.0	.9
4					2.3	6	21	20	8.5	1.4	1.0	.9
5					2.3	6	21	19	7.5	1.3	1.0	.9
6					2.3	6	21	18	7	1.3	1.0	.9
7					2.3	6	21	18	7	1.3	1.0	.9
8					2.3	6	22	18	7	1.3	1.0	.9
9					2.3	6.5	25	18	6.5	1.3	1.0	.9
10					2.3	7	24	18	6.5	1.2	1.0	.8
11					2.3	8	22	17	6	1.2	1.0	.8
12					2.3	6.5	22	15	5.5	1.2	1.0	.8
13					2.2	6	21	15	5.5	1.2	1.0	.8
14					2.2	6.5	21	15	6	1.2	1.0	.7
15					2.1	6.5	21	15	5	1.2	1.0	.7
16					2.1	6.5	27	14	5	1.2	1.0	.8
17					2.5	7	22	14	4.5	1.2	1.0	.9
18					2.3	7	21	18	4.0	1.1	1.0	.8
19					2.1	7.5	20	16	3.5	1.0	1.0	.8
20					2.1	7.5	18	15	3.3	1.0	1.0	.9
21					2.2	8	16	13	3.2	1.0	1.0	.9
22					4.3	8.5	16	12	3.0	1.0	1.0	.9
23					4.4	9	16	12	3.0	1.0	.9	.9
24					4.0	8.5	19	12	2.9	1.0	.9	1.0
25				2.5	7	9	22	12	2.8	1.0	.9	1.0
26				2.5	7	10	22	12	2.6	1.0	.9	1.0
27				2.5	7	11	24	11	2.3	1.7	.9	.9
28				2.4	6	13	22	10	2.2	1.3	.9	.8
29				2.4		15	22	10	1.8	1.3	.9	.8
30				2.4		17	21	9.5	1.8	1.2	.9	1.0
31				2.3		20		9		1.2	.9	

NOTE.—Water-stage recorder not in operation Jan. 25 to Feb. 18—discharge estimated from record of flow on San Dimas Creek.

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Daily discharge, in second-feet, of San Antonio Creek near Claremont, Calif., for 1917–18—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	1.0	0.9	0.9	0.8	0.8	2.2	42	22	7	0.9	0.8	0.7
2	1.1	.9	.9	.8	.8	1.8	41	22	6.5	.9	.8	.7
3	1.1	.9	.9	.8	.8	1.8	41	22	6	.9	.8	.7
4	1.1	.9	.9	.8	.8	1.7	41	20	5.5	.9	.8	.7
5	1.1	1.0	.9	.8	.8	1.8	41	21	4.9	.9	.8	.7
6	1.2	1.2	.9	.8	.8	2.4	40	21	4.5	.9	.8	.7
7	1.2	1.1	.9	.7	.8	133	37	20	4.3	.9	.8	.7
8	1.1	1.1	.8	.7	.8	96	35	20	3.9	.9	.8	.7
9	1.1	1.0	.8	.8	.9	45	32	20	3.7	.9	.8	.7
10	1.0	.9	.8	.8	.9	94	31	20	3.5	.9	.8	.7
11	1.1	.9	.8	.8	.9	179	30	23	3.0	.9	.8	.7
12	1.1	.9	.7	.8	.9	184	30	18	2.5	.9	.8	.7
13	1.2	.9	.7	.8	.9	175	31	17	2.3	.9	.8	.8
14	1.2	.9	.8	.9	.9	165	30	15	2.1	.8	.8	.8
15	1.1	.9	.8	.9	.9	150	29	15	1.7	.8	.8	.8
16	1.1	.9	.8	.9	.9	130	27	14	2.0	.8	.8	.8
17	1.1	.9	.8	.9	1.1	110	26	14	1.7	.8	.8	.8
18	1.1	.9	.8	.9	1.1	96	25	13	1.7	.8	.8	.8
19	1.0	.9	.8	.9	1.1	89	26	12	1.7	.8	.8	.8
20	1.0	.9	.8	.9	1.1	88	25	11	1.7	.8	.8	.8
21	.9	.9	.8	.9	2.8	69	25	11	1.5	.8	.8	.8
22	.9	.9	.8	.8	10	65	24	11	1.4	.8	.8	.8
23	.8	.9	.8	.8	7	61	24	10	1.2	.8	.8	.8
24	.8	.9	.8	.8	3.6	57	24	10	1.2	.8	.8	.8
25	.7	.9	.8	1.1	3.4	53	24	10	1.1	.8	.7	.8
26	.8	.9	.8	1.0	3.8	50	24	9.5	1.1	.8	.6	.8
27	.8	.9	.8	1.0	3.4	49	24	9	1.0	.8	.6	.9
28	.8	.9	.8	.9	2.7	46	25	10	.9	.8	.6	.9
29	.9	.9	.8	.8	.....	45	24	9.5	.9	.8	.7	.9
30	.9	.9	.8	.8	.....	43	24	8.5	.9	.8	.7	.8
31	.8	.....	.8	.8	.....	43	.....	7.5	.....	.8	.7	.....

Monthly discharge of San Antonio Creek near Claremont, Calif., for 1917–18.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1917.					1917–18.				
January 25–31	2.5	2.3	2.43	33.7	October	1.2	0.8	1.00	61.5
February	7	2.1	3.11	173	November	1.2	.9	.93	55.3
March	20	6	8.42	518	December	.9	.7	.82	50.4
April	27	16	21.0	1,250	January	1.1	.7	.85	52.3
May	22	9	15.0	922	February	10	.8	1.95	108
June	8.5	1.8	4.95	295	March	184	1.7	75.1	4,620
July	1.8	1.0	1.24	76.2	April	42	24	30.1	1,790
August	1.2	.9	.98	60.3	May	23	7.5	15.0	922
September	1.0	.7	.87	51.8	June	7	9.	2.71	161
					July	.9	.8	.84	51.6
The period	.....	.....	.....	3,380	August	.8	.6	.77	47.3
					September	.9	.7	.77	45.8
					The year	184	.6	11.0	7,970

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Daily discharge, in second-feet, of San Antonio Creek and Southern California Edison Co.'s canal near Claremont, Calif., for 1917–18.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917.												
1	.....	.....	.....	.....	15	28	41	43	29	21	17	13
2	.....	.....	.....	.....	15	28	41	41	29	21	17	13
3	.....	.....	.....	.....	15	28	42	40	30	20	17	13
4	.....	.....	.....	.....	15	27	42	41	30	20	17	13
5	.....	.....	.....	.....	15	27	42	40	28	20	17	13
6	.....	.....	.....	.....	15	27	42	39	28	20	17	13
7	.....	.....	.....	.....	15	27	42	39	28	20	16	13
8	.....	.....	.....	.....	15	27	43	39	28	20	16	13
9	.....	.....	.....	.....	15	28	46	39	28	19	16	13
10	.....	.....	.....	.....	15	28	45	39	28	19	16	12
11	.....	.....	.....	.....	15	29	43	38	27	19	16	12
12	.....	.....	.....	.....	15	28	43	36	26	19	16	12
13	.....	.....	.....	.....	15	27	42	36	26	19	16	12
14	.....	.....	.....	.....	15	28	42	36	27	19	16	12
15	.....	.....	.....	.....	15	28	42	36	26	18	15	12
16	.....	.....	.....	.....	16	28	48	35	26	18	15	12
17	.....	.....	.....	.....	17	28	43	35	24	18	15	12
18	.....	.....	.....	.....	17	28	42	39	23	18	15	12
19	.....	.....	.....	.....	17	28	41	37	22	18	14	12
20	.....	.....	.....	.....	17	28	39	36	22	17	14	12
21	.....	.....	.....	.....	18	29	37	34	22	17	14	12
22	.....	.....	.....	.....	23	30	37	33	22	17	14	12
23	.....	.....	.....	.....	22	30	37	33	22	17	14	12
24	.....	.....	.....	.....	22	30	40	33	22	17	14	12
25	.....	.....	.....	16	28	30	43	33	22	16	14	12
26	.....	.....	.....	16	28	31	43	33	22	17	14	12
27	.....	.....	.....	16	28	32	45	32	21	20	14	12
28	.....	.....	.....	16	27	34	43	31	21	19	14	11
29	.....	.....	.....	15	.....	36	43	31	21	18	14	12
30	.....	.....	.....	15	.....	38	42	30	21	18	14	12
31	.....	.....	.....	15	.....	41	.....	30	.....	18	13	.....
1917–18.												
1	12	10	10	9	8	12	61	41	26	20	16	12
2	12	10	10	9	8.5	11	60	41	26	20	15	12
3	11	10	10	9	8.5	11	60	41	25	19	15	12
4	12	10	10	9	8.5	11	60	39	25	19	15	12
5	12	10	10	9	8.5	12	60	40	24	19	15	12
6	11	12	10	9	8.5	15	59	40	24	19	15	12
7	11	11	10	8.5	8.5	153	56	39	24	19	15	12
8	11	11	10	9	8.5	116	54	39	23	19	15	12
9	12	10	10	8.5	8.5	65	51	39	23	18	15	12
10	11	10	9.5	9	8.5	114	50	39	23	18	15	12
11	11	10	10	9	8.5	199	49	42	22	18	14	12
12	11	10	9.5	9	8.5	204	49	37	22	18	14	12
13	11	10	9.5	9	8.5	195	50	36	22	18	14	12
14	12	10	9.5	9	8.5	185	49	34	22	18	14	12
15	12	10	10	9	8.5	170	48	34	21	18	14	12
16	12	10	9.5	9	8.5	150	46	33	21	17	14	12
17	11	10	9.5	8.5	8.5	130	45	33	21	17	14	12
18	11	10	9.5	9	9	116	44	32	21	17	14	12
19	11	10	9.5	9	8.5	109	45	31	21	17	14	11
20	11	10	9.5	9	9	108	44	30	21	17	14	11
21	11	10	9.5	8.5	13	89	44	30	21	16	13	11
22	10	10	9	8.5	26	85	43	30	21	16	14	11
23	10	10	9.5	9	18	81	43	29	20	17	14	11
24	10	10	9	8.5	14	77	43	29	20	16	13	11
25	11	10	9	9.5	14	73	43	29	20	16	13	11
26	11	10	9	9	14	70	43	29	20	16	13	11
27	11	10	9	9	14	69	43	28	20	16	13	12
28	10	10	9	9	12	66	44	29	20	16	13	12
29	10	10	9	8.5	.....	65	43	29	20	16	13	11
30	10	10	9	8.5	.....	63	43	28	20	15	12	11
31	10	.....	9	8.5	.....	63	.....	27	.....	15	13	.....

NOTE.—See page 346 for daily discharge of Southern California Edison Co.'s canal.

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Monthly discharge of San Antonio Creek and Southern California Edison Co.'s canal near Claremont, Calif., for 1917-18.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1917.					1917-18.				
January 25-31	16	15	15.6	217	October	12	10	11.0	676
February	28	15	18.0	1,000	November	12	10	10.1	601
March	41	27	29.5	1,810	December	10	9	9.53	586
April	46	37	42.0	2,500	January	9	8.5	8.87	545
May	43	30	36.0	2,210	February	26	8	10.6	589
June	30	21	25.0	1,490	March	204	11	93.1	5,720
July	21	16	18.6	1,140	April	61	43	49.1	2,920
August	17	13	15.2	935	May	42	27	34.1	2,100
September	13	11	12.3	732	June	26	20	22.0	1,310
					July	20	15	17.4	1,070
The period				12,000	August	16	12	14.0	861
					September	12	11	11.7	696
					The year	204	8	24.4	17,700

SAN ANTONIO CREEK NEAR UPLAND, CALIF.

LOCATION.—In SW. ¼ sec. 36, T. 2 N., R. 8 W., below Southern California Edison Co.'s power house, about 4 miles above mouth of canyon, and 8 miles northwest of Upland, San Bernardino County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 2,700 feet above sea level.

RECORDS AVAILABLE.—March 11, 1901 to January, 31, 1917.

DISCHARGE.—Determined from gage-height record obtained at 10-foot rectangular weir in tailrace; excess water flowing over diverting dam is estimated.

EXTREMES OF DISCHARGE.—1901-1917: Maximum mean daily discharge reported, 607 second-feet February 21, 1914 (no record for flood of January, 1916); minimum mean daily discharge reported, 3.4 second-feet February 29, 1904.

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Capacity of power canal is about 21 second-feet. Records excellent when flow of creek does not exceed capacity of canal.

COOPERATION.—Daily discharge record furnished by Pacific Light & Power Corporation, through H. A. Barre, chief engineer, and Southern California Edison Co.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901.							
1	.....	5.6	18	17	14	10	8.7
2	.....	5.6	18	17	14	10	8.7
3	.....	5.5	17	16	14	9.6	8.7
4	.....	5.4	17	16	13	9.9	8.7
5	.....	5.6	16	16	14	9.6	8.7
6	.....	5.3	13	16	14	9.9	8.7
7	.....	5.5	17	16	14	9.9	8.7
8	.....	5.4	17	16	13	9.9	8.7
9	.....	5.4	17	16	13	9.7	8.3
10	.....	5.4	16	16	13	9.7	8.3
11	5.4	5.4	16	16	13	9.6	8.3
12	5.6	5.4	16	16	12	9.9	8.0
13	5.6	5.4	16	16	12	9.7	7.7
14	5.6	5.5	16	16	12	9.7	8.0
15	5.4	5.5	16	16	12	9.6	7.7
16	5.7	5.0	16	16	12	9.3	8.0
17	5.4	5.0	17	16	12	9.3	8.0
18	5.6	5.0	17	16	12	9.3	8.0
19	5.4	5.1	17	16	12	9.3	7.7
20	5.4	5.1	17	16	12	9.3	7.7
21	5.6	5.3	17	16	12	9.3	8.0
22	5.6	5.2	17	16	12	9.3	8.0
23	5.6	16	17	15	12	9.3	8.0
24	5.6	16	17	16	12	9.3	7.9
25	5.6	16	17	16	12	9.3	7.9
26	5.6	16	[a] 17	14	12	8.7	7.9
27	5.6	16	17	14	12	8.7	7.7
28	5.4	16	17	14	11	8.7	7.4
29	5.6	16	17	14	11	8.7	7.4
30	5.5	16	[a] 17	14	11	8.7	7.8
31	5.4	.....	17	.....	11	8.7	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901-2.												
1	7.4	7.4	6.3	6.0	6.0	6.3	8.3	9.3	9.7	6.3	6.1	5.3
2	7.9	7.4	6.3	6.0	6.0	6.3	8.3	9.3	9.7	6.5	5.7	4.9
3	7.4	7.4	6.3	6.0	6.0	7.1	8.3	10	9.7	6.8	5.7	4.9
4	7.4	7.2	6.3	6.0	6.0	6.8	8.3	10	9.0	6.5	5.7	4.9
5	7.4	7.2	6.3	6.0	6.0	6.8	8.3	10	9.0	6.5	5.7	4.9
6	7.2	7.2	6.3	6.0	6.0	6.8	8.3	11	9.0	6.5	5.7	4.9
7	7.4	7.2	6.3	6.0	6.0	7.1	8.3	11	9.0	6.6	5.7	4.9
8	7.2	7.2	6.3	6.0	6.0	6.8	8.3	11	9.0	6.6	5.7	4.9
9	7.2	7.2	6.3	6.0	6.0	6.8	8.3	11	8.7	6.6	5.4	4.9
10	7.2	7.2	6.3	6.0	6.0	6.8	8.3	11	8.3	6.6	5.4	4.9
11	7.2	7.7	6.3	6.0	6.0	7.4	8.3	11	8.7	6.6	5.4	4.9
12	7.2	7.2	6.3	6.0	5.7	7.4	8.3	11	8.7	6.6	5.4	4.9
13	6.8	7.2	6.3	6.0	5.7	7.4	8.3	11	8.3	6.6	5.4	4.9
14	6.8	7.2	6.3	6.0	5.7	7.4	8.3	11	8.0	6.3	5.4	4.9
15	6.8	6.8	6.3	6.0	5.7	7.4	8.3	11	8.0	6.3	5.4	4.9
16	6.8	6.8	6.3	6.0	5.7	7.4	8.3	11	8.0	6.3	5.4	4.9
17	6.8	6.8	6.3	6.0	5.7	7.4	8.3	11	8.0	6.3	5.4	4.9
18	6.8	6.8	6.3	6.0	5.7	7.4	8.3	11	8.0	6.3	5.4	4.9
19	6.8	6.8	6.3	6.0	5.7	7.4	9.0	11	7.7	6.3	5.4	4.9
20	6.8	6.8	6.3	6.3	5.7	7.7	9.0	11	7.7	6.0	5.4	4.9
21	6.8	6.8	6.3	6.0	5.7	7.7	9.0	11	7.4	6.0	5.4	4.9
22	6.8	6.8	6.3	6.0	5.7	7.7	9.0	11	7.4	6.0	5.4	4.9
23	7.2	6.5	6.3	6.0	5.7	7.4	9.0	11	7.4	6.0	5.4	4.9
24	7.2	6.5	6.3	6.0	5.7	7.4	8.9	11	7.4	6.0	5.4	4.9
25	7.2	6.5	6.0	6.3	5.7	8.3	8.9	11	7.1	6.0	5.2	4.9
26	7.2	6.3	6.0	6.3	5.7	8.3	8.9	10	6.8	6.0	5.2	4.9
27	7.2	6.3	6.0	6.3	6.8	8.3	8.9	10	6.8	6.0	5.2	4.9
28	8.7	6.3	6.0	6.0	6.8	8.3	9.3	10	6.5	6.0	5.2	4.9
29	7.7	6.3	6.0	6.0	.....	8.3	9.3	10	6.5	6.0	5.2	4.9
30	7.7	6.3	6.0	6.0	.....	8.3	9.3	10	6.5	6.0	5.2	4.6
31	7.7	.....	6.0	6.0	.....	8.3	.....	9.7	.....	6.0	5.2	.....

[a] Interpolated by United States Geological Survey.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1902–3.												
1	4.6	4.2	4.4	4.4	6.3	6.3	200	16	16	18	12	9.9
2	4.6	4.2	4.4	4.4	6.3	6.3	160	16	16	18	12	9.9
3	4.6	4.2	4.4	4.4	6.0	6.0	.....	16	16	17	12	9.7
4	4.6	4.2	4.4	4.4	6.0	6.3	.....	16	16	17	12	9.7
5	4.6	4.2	4.4	4.4	6.0	7.4	14	16	16	17	12	9.7
6	4.6	4.2	4.4	4.4	6.0	7.1	16	16	16	17	12	9.3
7	4.6	4.2	4.4	4.4	6.0	7.1	16	16	16	17	11	9.3
8	4.6	4.2	4.4	4.4	6.0	7.1	16	16	16	17	11	9.3
9	4.6	4.6	4.4	4.4	6.0	7.1	16	16	16	17	11	9.3
10	4.6	4.4	4.4	4.4	6.0	7.1	16	16	20	17	11	9.3
11	4.6	4.4	4.4	4.4	6.0	7.1	16	16	20	16	11	9.3
12	4.6	4.9	4.4	4.4	6.0	7.1	16	16	20	16	11	9.3
13	4.6	4.4	4.6	4.4	6.0	7.1	16	16	20	16	11	9.3
14	4.6	4.4	4.4	4.4	6.0	7.1	16	16	20	16	11	9.3
15	4.6	4.4	4.4	4.4	6.0	7.1	16	16	20	16	11	9.3
16	4.6	4.4	4.4	4.4	6.0	7.1	16	16	20	16	11	9.3
17	4.4	4.4	4.4	4.4	6.0	7.1	16	16	20	16	11	9.0
18	4.4	4.4	4.6	4.4	6.0	7.1	16	16	20	16	11	9.0
19	4.4	4.4	4.6	4.4	6.0	7.1	16	16	20	16	11	9.3
20	4.4	4.4	4.6	4.4	6.0	7.1	.....	16	20	16	11	9.0
21	4.4	4.4	4.6	4.4	6.0	9.0	.....	16	20	16	11	9.0
22	4.4	4.4	4.6	4.4	6.0	7.1	.....	16	20	16	11	9.0
23	4.4	4.4	4.6	4.4	6.0	7.1	.....	16	20	15	11	9.0
24	4.4	4.4	4.6	4.4	6.0	7.1	.....	16	20	14	11	9.0
25	4.4	4.4	4.6	4.4	6.0	9.0	16	16	19	13	11	9.0
26	4.4	4.4	4.4	4.4	6.0	9.0	16	16	19	13	11	9.0
27	4.4	4.4	4.4	5.7	6.0	8.7	16	16	19	13	11	9.0
28	4.4	4.4	4.4	5.7	6.0	8.7	16	16	19	13	11	9.0
29	4.4	4.4	4.4	6.3	.....	.....	16	16	19	13	10	9.0
30	4.4	4.4	4.4	6.3	.....	.....	16	16	19	13	10	9.0
31	4.4	.....	4.4	6.3	.....	.....	.....	16	.....	13	9.9	.....
1903–4.												
1	8.7	7.4	7.1	6.6	6.3	7.4	11.0	15.0	14	9.3	7.4	6.8
2	8.7	7.4	7.1	6.6	6.3	7.4	11.0	15.0	14	9.3	7.1	6.6
3	8.7	7.4	7.1	6.6	6.3	7.1	11.0	15.0	14	9.3	7.1	6.6
4	8.7	7.4	7.1	6.6	6.3	7.1	11.0	15.0	14	9.3	7.1	6.6
5	8.7	7.4	7.1	6.6	6.3	7.1	11.0	15.0	13	9.3	7.1	6.6
6	8.7	7.4	7.1	6.6	6.6	6.8	11.0	15	13	9.3	7.1	6.6
7	8.7	7.4	7.1	6.6	6.3	6.8	11.0	15	12	9.3	7.1	6.6
8	8.7	7.4	7.1	6.6	6.3	6.8	11.0	15	12	9.3	7.1	6.0
9	8.7	7.4	7.1	6.6	6.3	6.8	11.0	15	12	9.3	7.1	6.0
10	8.7	7.4	7.1	6.6	6.3	6.8	11.0	16	12	9.3	7.1	6.6
11	8.7	7.4	7.1	6.6	6.3	8.0	11.0	17	12	9.3	7.1	6.6
12	8.7	7.4	7.1	6.6	6.3	7.1	11.0	17	12	9.3	7.1	6.3
13	7.4	7.4	7.1	6.6	6.3	7.1	11.0	17	11	9.0	7.1	6.6
14	7.4	7.4	7.1	6.6	6.3	7.1	11.0	17	11	7.7	7.1	6.6
15	7.4	7.4	6.8	6.6	6.0	7.1	11.0	16	11	7.7	8.0	6.3
16	7.4	7.4	6.8	6.6	6.6	7.1	13.0	16	11	7.7	8.3	6.3
17	7.4	7.4	6.6	6.6	6.6	7.1	13.0	16	11	7.7	8.3	6.3
18	7.4	7.1	6.8	6.6	6.6	7.1	13.0	16	11	7.7	8.0	6.3
19	7.4	7.1	6.8	6.6	6.6	7.1	13.0	16	11	7.7	8.0	6.3
20	8.0	7.1	6.8	6.6	6.3	7.1	15.0	16	11	7.7	7.7	6.3
21	8.0	7.1	6.8	6.6	6.3	7.1	15.0	16	11	7.7	7.7	6.3
22	7.4	7.1	6.8	6.6	6.3	7.1	15.0	15	10	7.7	7.7	6.3
23	7.4	7.1	6.8	6.6	6.3	17.0	15.0	15	10	7.7	7.7	6.3
24	7.4	7.1	6.8	6.6	6.3	10.0	14.0	15	10	7.7	7.5	6.3
25	7.4	7.1	6.8	6.6	6.3	10.0	14.0	15	10	7.7	7.5	6.3
26	7.4	7.1	6.8	6.6	6.3	9.3	14.0	15	10	7.5	7.5	6.3
27	7.4	7.1	6.8	6.3	6.3	9.3	14.0	15	11	7.5	7.5	6.3
28	7.4	7.1	6.6	6.6	8.4	9.3	14.0	15	11	7.5	7.5	6.3
29	7.4	7.1	6.6	6.6	3.4	9.7	14.0	15	[a] 10	7.5	7.5	6.3
30	7.4	7.1	6.6	6.0	.....	9.7	14.0	15	[a] 10	7.5	6.8	6.0
31	7.4	.....	6.6	6.3	.....	11.0	.....	15	.....	7.5	6.8	.....

[a] Interpolated by United States Geological Survey.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.												
1	5.7	5.4				18	70	30	[a] 34	33	20	14
2	5.7	5.4				18	50	34	34	32	20	14
3	5.7	5.4				18	50	34	32	30	20	14
4	5.7	5.4				18	46	34	32	30	20	14
5	5.7	5.4				18	40	34	32	30	20	13
6	5.7	5.4				19	40	34	32	30	20	13
7	5.7	5.4				19	40	32	32	30	20	13
8	6.3	5.4				19	40	33	32	28	16	13
9	6.0	5.4				19	40	33	32	28	16	13
10	6.0	5.4				19	40	36	32	24	16	13
11	5.7	5.4				19	40	36	30	24	16	13
12	5.7	5.4				120	40	34	30	24	16	13
13	5.7	5.4				280	40	34	30	24	16	13
14	5.7	5.4				280	40	34	30	24	16	13
15	5.7	5.4				200	40	34	30	24	16	13
16	5.7	5.4				[a] 300	40	34	34	24	16	13
17	5.7	5.4				400	40	34	34	24	16	13
18	5.7	5.4				300	40	34	34	22	16	13
19	5.7	5.4				200	40	34	34	22	16	13
20	5.7	5.4				160	[a] 40	34	34	22	16	12
21	5.4	5.4				120	40	34	34	20	16	12
22	5.4	5.4				100	40	34	34	20	15	12
23	5.4	5.4				100	40	34	34	20	15	12
24	5.4	5.4				80	34	34	34	20	16	12
25	5.4	5.4				70	34	34	32	20	16	12
26	5.4					60	32	34	32	20	15	12
27	5.4				15	60	32	34	32	20	15	12
28	5.4				17	60	30	34	32	20	15	12
29	5.4					60	30	34	32	20	14	12
30	5.4					70	30	34	32	20	14	12
31	5.4					70		34		20	14	
1905–6.												
1	12	10	12	11	13	16	240	90	100	80	30	22
2	12	10	11	11	13	16	220	90	100	80	30	21
3	12	10	11	11	13	16	180	90	100	80	30	21
4	12	10	11	11	13	17	170	80	100	80	30	19
5	12	10	11	10	13	17	160	80	100	70	30	19
6	12	10	11	10	13	16	160	80	100	70	30	19
7	12	11	11	10	13	16	160	80	100	70	30	18
8	12	13	11	9.8	13	16	160	80	100	60	30	18
9	12	13	11	9.8	13	16	140	80	90	60	30	18
10	11	12	11	9.8	13	16	130	80	90	60	30	18
11	11	12	11	9.8	13	60	120	80	90	50	30	18
12	11	11	11	9.8	13	300	120	80	90	50	30	17
13	11	11	11	9.8	13	160	120	80	90	50	30	17
14	11	11	11	10	13	160	110	80	90	50	30	17
15	11	11	11	10	13	160	100	80	90	50	30	17
16	11	12	11	9.9	14	160	100	80	90	40	30	17
17	11	12	11	9.9	14	240	100	80	90	40	30	17
18	11	12	11	9.9	14	200	100	80	80	40	28	17
19	11	11	11	11	14	200	90	80	80	30	28	17
20	[a] 11	11	11	15	14	180	90	80	80	30	28	16
21	11	11	11	14	22	180	90	80	80	30	28	16
22	11	11	11	13	14	160	90	80	80	30	27	16
23	11	11	11	13	14	160	90	80	80	30	27	16
24	11	11	11	10	14	160	90	80	80	30	27	16
25	11	11	11	10	14	240	90	80	80	30	26	16
26	11	11	11	10	14	260	90	80	80	30	26	15
27	11	12	11	13	14	300	90	80	80	30	25	15
28	11	13	11	13	14	280	90	100	80	30	25	15
29	11	12	11	13		280	90	110	80	30	23	15
30	10	12	11	13		260	90	110	80	30	23	15
31	10		11	13		250		110		30	22	

[a] Interpolated by United States Geological Survey.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	15	13	12	16	32	60	130	100	70	40	24	21
2	15	12	12	16	32	60	130	100	70	40	24	20
3	15	12	12	17	34	60	130	100	70	40	24	20
4	15	12	12	17	34	60	130	100	50	30	24	19
5	15	12	12	17	35	160	130	100	70	30	22	19
6	14	12	12	18	37	160	130	100	70	30	22	19
7	14	12	12	18	39	140	130	100	70	30	22	19
8	14	12	12	18	40	130	130	100	70	30	22	18
9	14	12	12	18	42	130	130	100	70	30	22	18
10	14	12	12	24	42	120	120	100	70	30	22	18
11	14	12	12	22	43	120	120	100	60	30	22	18
12	13	12	17	22	43	120	120	100	60	30	22	18
13	13	12	14	26	43	110	110	90	60	30	22	17
14	13	12	14	28	43	100	110	90	60	30	21	18
15	13	12	13	28	43	100	110	90	60	30	21	18
16	13	12	13	28	44	100	110	90	50	30	21	17
17	13	12	13	28	54	100	110	90	50	28	21	17
18	13	12	13	30	54	100	110	90	50	28	21	17
19	13	12	13	30	54	100	110	90	50	28	21	17
20	13	12	13	30	54	100	100	80	50	26	21	17
21	13	12	13	30	54	160	100	80	50	26	21	17
22	13	12	13	30	60	140	100	80	50	26	21	16
23	13	12	13	30	60	140	100	80	50	24	21	16
24	13	12	13	30	60	140	100	80	50	26	21	15
25	13	12	13	30	60	160	100	80	50	24	21	15
26	13	12	13	30	60	160	100	80	50	24	21	15
27	13	12	13	30	60	160	100	80	50	24	21	15
28	13	12	18	30	60	150	100	80	50	24	21	15
29	13	12	17	31	.....	150	100	80	50	24	21	15
30	13	12	17	32	.....	140	100	80	50	24	21	15
31	13	.....	17	32	.....	130	.....	70	.....	24	21	.....
1907–8.												
1	15	14	12	11	14	15	31	30	22	16	14	9.5
2	15	14	12	11	14	15	31	30	22	16	14	9.5
3	15	14	11	11	15	15	31	36	22	16	14	9.5
4	15	13	11	10	16	15	31	35	22	16	13	9.5
5	15	13	11	10	16	15	31	35	22	15	13	9.2
6	15	13	11	10	16	15	31	33	22	15	12	9.0
7	15	13	11	10	16	15	30	33	22	15	12	9.0
8	15	13	12	10	16	15	29	32	22	15	12	9.0
9	15	13	12	10	16	15	29	31	22	14	12	9.0
10	15	13	12	10	16	15	29	29	21	14	12	9.0
11	15	13	11	10	16	15	28	27	21	14	12	a 9.0
12	15	13	11	10	16	15	28	27	20	14	12	9.0
13	15	13	11	10	16	15	28	26	20	14	13	9.0
14	15	13	11	10	16	15	28	25	20	13	12	9.0
15	14	13	11	10	16	15	28	24	19	13	12	9.0
16	15	13	11	10	16	15	28	24	19	13	12	9.0
17	15	13	11	10	16	15	27	24	18	13	12	9.0
18	15	13	11	10	16	16	27	24	18	13	11	9.0
19	15	13	11	10	16	16	27	24	18	13	11	9.0
20	14	13	11	10	15	18	27	24	18	13	11	9.0
21	14	13	a 11	9.9	15	18	27	24	18	13	11	9.0
22	14	13	11	9.7	15	18	29	24	18	13	11	9.0
23	15	13	11	9.7	15	21	35	24	18	13	11	9.0
24	15	13	11	12	15	21	35	24	17	13	11	10.7
25	15	13	11	13	15	22	33	23	17	13	11	10
26	15	13	11	17	15	23	31	22	17	13	11	10
27	15	13	11	15	15	22	31	22	17	13	a 10	9.5
28	15	13	11	15	15	31	31	22	17	12	10	9.5
29	14	13	11	14	15	31	31	22	17	12	10	9.5
30	14	12	11	14	.....	31	30	22	16	12	10	9.0
31	14	.....	11	14	.....	31	.....	22	.....	12	10	.....

a Interpolated by United States Geological Survey.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901-1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908-9.												
1	9.0	8.5	7.9	7.9	35	81	101	81	71	27	19	15
2	9.0	8.5	[a] 8.2	7.9	33	81	101	81	71	27	19	15
3	9.0	8.5	8.5	7.9	31	81	101	81	61	27	18	15
4	9.0	8.5	8.5	7.9	35	81	81	81	61	27	17	15
5	9.0	8.0	8.2	7.9	35	81	81	81	57	27	17	15
6	9.0	7.9	8.2	7.9	35	81	81	81	57	27	17	15
7	9.0	7.9	8.2	7.9	41	81	81	81	57	27	17	14
8	9.0	7.9	8.2	7.9	61	81	81	81	57	27	17	13
9	8.8	7.9	8.2	8.0	61	81	81	81	57	27	17	13
10	8.5	7.9	8.2	8.0	61	81	81	81	57	27	17	13
11	8.5	7.9	7.9	8.0	61	81	81	81	51	26	17	13
12	8.5	7.9	8.4	8.1	81	81	81	81	51	25	17	13
13	8.5	7.9	8.4	8.2	101	81	81	81	51	23	17	13
14	8.5	7.9	8.4	8.2	101	81	81	81	51	23	17	13
15	8.5	7.9	8.4	8.1	101	81	81	81	51	22	16	13
16	8.5	7.9	8.4	8.1	101	81	81	81	45	23	16	14
17	8.5	7.9	8.4	8.0	101	81	81	81	41	23	16	12
18	8.5	7.9	8.5	8.0	101	81	81	81	41	23	16	12
19	8.5	7.9	8.5	8.0	101	81	81	81	41	23	16	12
20	8.5	7.9	8.5	8.0	91	80	81	81	41	23	16	12
21	8.5	7.9	8.5	8.7	91	81	81	81	41	22	16	12
22	8.5	7.9	8.5	121	91	101	81	81	39	21	16	12
23	8.5	7.9	8.4	51	81	101	81	81	39	21	16	12
24	8.5	7.9	8.4	130	81	101	81	81	33	21	16	12
25	8.5	7.9	8.2	45	81	101	81	81	33	21	15	12
26	8.5	7.9	8.0	45	81	101	81	81	31	21	15	12
27	8.5	7.9	7.9	45	81	101	81	81	31	21	15	12
28	8.5	7.9	7.9	45	81	101	81	81	31	21	15	12
29	8.5	7.9	7.9	37	.....	101	81	81	29	21	15	12
30	8.5	7.9	7.9	35	.....	101	81	81	29	20	15	12
31	8.5	.....	7.9	35	.....	101	.....	81	.....	18	15	.....
1909-10.												
1	12	11	11	.....	51	33	27	22	16	14	11	9.0
2	12	11	11	.....	51	31	26	22	16	14	11	9.0
3	12	11	11	.....	51	28	26	22	16	14	11	9.0
4	12	11	11	.....	51	28	26	22	16	14	11	9.0
5	12	10	11	.....	51	26	26	22	16	14	11	9.0
6	12	10	11	.....	50	25	26	22	16	13	10	9.0
7	12	10	11	211	50	25	26	22	16	13	10	9.0
8	12	10	11	211	50	25	26	21	16	13	10	8.9
9	12	10	15	211	49	25	25	21	16	13	10	8.0
10	12	11	23	211	49	25	25	21	16	13	10	8.0
11	12	11	21	211	49	24	25	21	15	13	10	8.4
12	12	11	18	201	49	24	26	20	16	13	10	8.4
13	12	11	18	201	49	24	26	20	15	13	10	8.4
14	11	11	18	201	49	24	26	20	16	13	10	8.4
15	11	12	18	181	47	24	25	20	16	13	10	8.4
16	11	11	18	171	46	24	25	20	16	12	10	8.4
17	11	11	18	171	45	24	25	20	15	12	10	8.4
18	11	11	[a] 18	151	45	25	25	20	15	12	10	8.4
19	11	11	18	141	45	24	25	19	15	12	9.6	8.4
20	11	11	18	131	46	25	24	19	15	12	10	8.4
21	12	11	20	121	46	24	24	19	15	12	9.9	8.4
22	12	11	19	91	37	25	24	19	15	12	9.9	7.8
23	12	11	20	81	36	25	23	19	15	12	9.9	7.8
24	11	11	20	71	35	25	23	19	15	12	9.9	7.4
25	11	11	20	71	35	25	22	18	15	11	9.9	7.8
26	11	11	18	81	34	25	22	17	15	11	9.9	7.8
27	11	11	18	81	34	25	22	17	14	11	9.9	7.8
28	11	11	17	81	33	27	22	17	14	11	9.9	7.8
29	11	11	17	71	.....	27	22	17	14	11	9.9	7.4
30	11	11	17	71	.....	27	22	17	14	11	8.6	7.8
31	11	.....	27	61	.....	27	.....	17	.....	11	9.0	.....

[a] Interpolated by United States Geological Survey.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	7.8	7.2	7.4	7.0	33	35	41	36	29	23	19	14
2	7.8	7.6	7.4	7.0	31	37	43	36	29	23	19	14
3	7.8	7.6	7.4	7.0	27	39	41	36	29	23	19	14
4	7.8	7.6	7.4	7.0	39	43	41	36	29	23	19	14
5	7.8	7.4	7.4	6.6	41	45	41	35	29	22	19	14
6	7.4	7.6	7.4	6.6	37	45	41	35	29	22	18	14
7	7.4	7.2	7.4	6.6	31	43	41	35	29	21	18	15
8	7.6	7.2	7.4	6.6	27	45	41	35	29	21	18	14
9	7.6	7.6	7.4	6.6	25	49	41	34	29	21	18	14
10	7.6	7.6	7.4	14	25	321	41	34	29	21	17	14
11	7.8	7.8	7.0	10	25	[a] 261	41	34	29	21	17	14
12	7.8	7.6	7.0	8.8	25	201	41	34	27	21	17	14
13	7.8	7.4	7.0	8.6	25	181	41	33	27	21	17	14
14	7.4	7.8	7.0	8.5	27	161	41	33	26	21	17	13
15	7.6	7.9	7.0	9.9	25	141	41	33	26	21	17	13
16	7.6	7.8	7.2	12	25	121	41	33	26	21	17	13
17	7.6	7.8	7.2	12	25	101	39	33	26	21	16	13
18	7.6	7.8	7.2	11	25	101	39	32	26	21	[a] 16	13
19	7.6	7.8	7.2	11	25	81	39	32	25	21	16	13
20	7.6	7.8	7.2	11	25	71	39	32	25	21	16	13
21	7.6	7.8	7.4	11	25	61	39	31	25	21	16	13
22	7.6	7.6	7.4	11	25	61	37	31	25	21	15	12
23	7.6	7.6	7.4	11	25	51	37	30	25	21	15	12
24	7.0	7.6	7.4	11	25	51	36	30	25	21	15	12
25	7.6	7.6	7.4	13	25	51	36	30	25	21	15	12
26	7.6	7.6	7.4	15	25	51	36	30	25	21	15	12
27	7.6	7.6	7.4	15	25	47	36	30	24	21	15	12
28	7.6	7.4	7.0	15	33	45	36	30	24	20	15	12
29	7.6	7.4	7.4	61	.....	41	36	30	24	20	15	12
30	7.6	7.4	7.4	61	.....	41	36	29	23	20	15	13
31	7.2	.....	7.4	41	.....	41	.....	29	.....	20	14	.....
1911–12.												
1	13	11	9.5	8.8	7.8	7.4	16	27	31	25	16	12
2	13	11	9.5	8.8	7.8	7.6	16	28	31	25	16	12
3	13	11	9.5	8.8	7.8	7.3	16	34	31	25	15	11
4	12	10	9.2	8.8	7.8	7.8	16	34	30	26	15	11
5	12	10	9.2	8.8	7.8	9.7	16	33	30	23	15	11
6	12	10	9.2	8.8	7.8	17	16	33	30	21	14	11
7	12	10	9.2	8.8	7.8	12	16	33	29	21	14	11
8	12	10	9.2	8.8	7.8	11	16	33	29	21	14	11
9	12	10	9.2	8.6	7.7	11	17	33	29	20	14	11
10	12	10	9.2	8.2	6.9	20	17	33	29	18	13	11
11	12	10	9.2	8.2	7.8	18	20	35	28	18	13	11
12	12	10	9.2	8.2	7.8	[a] 16	20	35	28	18	13	11
13	12	10	9.2	8.2	7.8	15	20	35	28	18	12	10
14	12	10	9.2	8.2	7.8	17	20	35	28	18	12	10
15	12	10	9.2	8.2	7.8	17	21	34	28	18	12	10
16	12	10	9.2	8.2	7.8	18	21	34	28	18	12	10
17	12	10	9.2	8.2	7.7	18	22	34	28	18	12	9.6
18	12	10	9.2	8.2	7.6	18	22	34	28	18	12	9.6
19	12	10	9.2	8.2	7.6	18	23	34	27	17	12	9.6
20	12	10	8.8	8.2	7.6	17	24	34	26	17	12	9.6
21	12	10	8.8	7.9	7.6	17	24	34	25	17	12	9.6
22	12	10	8.8	7.8	7.6	17	25	34	25	17	12	9.6
23	12	10	8.8	7.8	7.6	17	24	34	25	17	12	9.6
24	12	10	8.8	7.8	7.6	17	26	34	25	16	12	9.6
25	11	10	8.8	7.8	7.6	17	27	34	25	16	12	9.6
26	11	10	8.8	7.8	7.6	17	27	34	25	16	12	9.6
27	11	10	8.8	7.8	7.4	17	28	33	25	16	12	9.6
28	11	10	8.8	7.8	7.4	17	27	32	25	16	12	9.6
29	11	9.5	8.8	7.8	7.3	16	27	31	25	16	12	9.6
30	11	9.5	8.8	7.8	.....	16	27	31	25	16	12	9.6
31	11	.....	8.8	7.8	.....	17	.....	31	.....	16	12	.....

[a] Interpolated by United States Geological Survey.

NOTE.—The following notes accompanied the records as furnished to the Survey: Apr. 3 and 4, 1903, plant shut down; Apr. 20-24, 1903, changing transformers; Nov. 26, 1904, to Feb. 26, 1905, no record; addition being made to power house; beginning Aug. 25, 1907, measurements were made below intake instead of above as heretofore.

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	9.6	9.0	8.7	8.7	7.1	10.0	10.0	16.0	15.1	10.6	8.7	7.1
2	9.6	8.6	8.7	6.5	7.1	9.5	10.8	16.0	15.1	10.4	8.4	7.1
3	9.0	8.6	8.7	6.5	7.1	9.5	10.8	16.0	15.0	10.4	8.4	7.2
4	11.0	8.6	8.7	6.5	7.1	9.0	10.8	16.4	14.5	10.2	8.3	7.1
5	11.0	8.6	8.7	6.5	7.1	9.0	11.0	16.4	14.5	10.2	8.3	7.0
6	11.0	8.6	8.7	6.5	7.1	9.0	11.7	16.4	14.3	10.2	8.3	7.0
7	10.0	8.6	8.7	6.8	7.1	9.0	11.9	16.4	14.3	9.0	8.0	7.0
8	9.5	8.6	8.7	6.8	11.0	9.0	12.5	16.4	14.3	10.2	8.0	7.0
9	9.5	8.6	8.7	6.8	8.7	9.0	12.7	16.0	13.7	9.9	8.3	6.9
10	9.5	8.6	8.7	6.8	8.2	9.5	12.7	16.0	13.4	9.9	8.3	7.0
11	9.5	8.6	8.7	6.8	8.2	9.5	13.6	15.4	13.4	9.9	8.2	7.0
12	9.5	8.6	8.7	6.8	7.8	9.5	15.0	15.4	13.2	9.9	8.0	7.0
13	9.5	8.6	8.7	6.8	7.8	9.5	15.0	15.2	13.2	9.1	7.6	6.8
14	9.0	8.6	8.7	6.8	7.8	9.5	15.0	15.0	12.9	9.4	7.6	7.0
15	9.0	8.6	8.7	6.8	7.8	9.5	16.2	14.5	12.9	9.4	7.6	6.6
16	9.0	8.6	8.7	9.6	7.8	9.5	16.9	14.5	12.4	8.1	7.6	7.0
17	9.0	8.6	8.7	9.6	7.6	9.5	16.9	14.0	12.4	8.1	7.6	6.8
18	9.0	8.6	8.7	7.6	7.6	9.5	16.9	14.0	12.4	8.8	7.5	6.5
19	9.0	8.6	8.7	7.6	7.6	9.5	17.4	13.5	12.0	8.8	7.5	6.6
20	9.0	8.6	8.7	7.6	7.6	9.5	17.4	13.5	12.0	8.8	7.6	6.6
21	9.0	8.7	8.7	7.6	7.6	9.5	16.9	13.0	11.7	8.9	7.5	6.6
22	9.0	8.7	8.7	7.6	7.6	9.5	16.9	13.0	11.7	8.7	7.5	6.7
23	9.0	8.7	8.7	7.6	8.7	10.0	16.9	13.0	11.7	8.7	7.4	6.8
24	9.0	8.7	8.7	7.6	11.0	10.0	16.9	14.3	11.4	8.8	7.4	6.7
25	9.0	8.7	8.7	7.1	12.5	10.0	16.5	15.1	11.4	9.2	7.5	6.7
26	9.0	8.7	8.7	7.1	12.3	10.0	16.5	15.6	11.4	9.2	7.4	6.7
27	9.0	8.7	8.7	7.1	10.9	10.0	16.5	15.6	11.4	9.2	7.4	6.7
28	9.0	8.7	8.7	7.1	10.9	10.0	16.0	16.0	11.4	9.0	7.4	6.7
29	9.0	8.7	8.7	7.1	.....	10.0	16.0	15.6	11.1	8.7	7.1	6.7
30	9.0	8.7	8.7	7.1	.....	10.0	16.0	15.6	11.1	8.7	7.2	6.7
31	9.0	.....	8.7	7.1	.....	10.0	.....	15.6	.....	8.7	7.1	.....

NOTE.—No record Nov. 20, 21, 28, 29, Dec. 1, and May 13; discharge interpolated by U. S. Geol. Survey.

1913–14.												
1	6.7	6.2	6.6	6.6	39	199	36	35	32	27	23	17.5
2	6.7	6.0	6.6	6.5	37	179	36	35	32	26	23	17.0
3	6.7	6.6	6.6	6.5	35	159	36	35	32	26	22	16.5
4	6.7	6.2	6.6	6.5	35	139	36	35	32	26	22	16.5
5	6.7	6.6	6.6	6.5	34	119	36	35	32	26	22	15.6
6	6.7	6.6	6.5	6.5	33	109	35	35	32	26	21	15.6
7	6.7	6.2	6.5	6.5	32	99	35	35	32	26	21	15.6
8	6.7	6.0	6.5	6.5	31	89	35	35	32	26	20	15.6
9	6.7	6.2	6.5	6.5	30	79	34	34	32	26	20	15.6
10	6.7	6.2	6.5	6.5	30	69	34	34	32	26	20	15.5
11	6.6	6.2	6.5	6.6	30	59	34	34	31	26	20	15.5
12	6.6	6.8	6.5	6.5	30	55	33	34	31	26	20	15.5
13	6.7	6.6	6.5	6.5	30	49	33	34	31	26	19.1	15.1
14	6.7	6.6	6.5	6.6	29	43	33	34	31	26	19.1	15.3
15	6.6	6.5	6.5	9.4	27	43	33	34	31	26	18.6	15.5
16	6.6	6.3	6.5	9.4	27	43	33	34	31	26	18.6	15.5
17	6.6	6.3	6.5	8.8	27	43	33	33	30	26	18.6	15.3
18	6.2	6.3	6.5	21	27	43	33	33	30	26	18.6	15.3
19	6.6	7.7	6.5	14	47	43	33	33	29	26	18.6	15.1
20	6.6	7.0	6.5	9.9	507	41	33	33	29	26	18.6	15.1
21	6.0	6.6	6.5	11.6	607	41	33	33	29	25	18.3	15.1
22	6.6	6.6	6.5	13.2	567	41	33	33	28	25	18.3	15.1
23	6.6	6.6	6.5	13.8	527	41	33	33	28	25	18.3	14.7
24	6.6	6.6	6.5	21	487	41	33	33	28	25	18.3	14.7
25	6.0	6.5	6.5	25	427	39	33	33	28	25	18.3	14.7
26	6.0	6.6	6.5	108	387	39	33	33	28	25	18.3	14.7
27	6.6	6.6	6.5	58	339	36	33	33	27	24	18.3	14.5
28	7.0	6.6	6.5	51	258	37	33	33	27	24	18.0	14.5
29	6.6	6.6	6.5	51	.....	37	33	33	27	24	18.0	14.5
30	6.0	6.6	6.5	51	.....	37	35	33	27	24	17.7	14.9
31	6.0	.....	6.5	43	.....	36	.....	33	.....	23	17.7	.....

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	14.5	12.4	10.8	10.9	18.0	59	31	43	43	33	23	19.1
2	14.3	12.4	10.8	10.9	23	59	35	46	45	33	22	19.1
3	15.3	12.4	10.8	10.9	29	59	35	46	43	33	22	19.1
4	13.9	12.1	10.8	10.9	25	59	35	46	43	33	22	18.6
5	13.1	12.1	10.8	10.9	23	59	35	46	43	33	22	18.6
6	14.3	12.1	10.8	10.9	23	59	35	46	43	31	22	18.6
7	13.9	12.1	10.8	10.9	21	54	35	46	43	31	22	18.8
8	13.9	11.8	10.8	10.9	21	53	35	46	43	31	21	18.0
9	13.9	11.8	10.5	10.9	22	53	35	43	43	31	21	17.7
10	13.9	11.8	10.5	10.9	118	49	35	43	43	29	21	17.7
11	13.9	12.1	10.5	10.9	108	49	35	43	41	29	21	17.4
12	13.2	12.1	10.8	10.9	108	49	35	43	41	27	21	17.1
13	13.2	11.8	10.8	10.3	108	47	35	43	41	27	19.6	17.1
14	13.2	11.8	10.5	10.3	99	47	35	43	39	27	19.6	17.1
15	13.2	11.8	10.5	9.8	79	45	35	43	39	27	19.6	17.1
16	12.9	11.4	10.3	10.3	79	45	35	43	39	27	19.6	16.7
17	12.9	11.4	13.6	9.8	79	43	35	43	39	27	19.6	16.0
18	12.9	11.0	12.3	9.6	69	39	35	43	37	26	19.6	16.0
19	12.6	11.0	10.9	9.8	69	39	35	47	37	26	19.6	14.7
20	12.6	11.0	10.5	9.8	69	39	35	47	37	26	19.1	14.3
21	12.6	11.0	10.9	9.6	65	39	35	47	37	26	19.1	15.2
22	12.1	11.0	10.9	10.3	65	35	35	45	37	25	19.1	15.2
23	12.0	10.8	10.5	9.8	65	35	35	45	37	25	18.9	15.0
24	12.6	10.8	10.5	9.6	65	35	35	45	37	25	19.1	15.3
25	12.6	10.8	10.5	9.8	65	35	35	45	37	24	18.6	16.0
26	12.4	10.8	10.5	9.8	65	35	35	45	37	24	18.0	15.2
27	12.4	10.5	10.9	9.8	59	35	35	45	35	24	21	14.7
28	12.6	10.8	10.9	9.8	59	35	35	45	35	23	19.6	14.1
29	12.4	10.8	10.9	42	.....	36	35	45	33	23	19.1	14.3
30	12.6	10.8	10.9	39	.....	36	43	45	33	23	19.1	14.1
31	12.6	.....	10.9	16	.....	35	.....	43	.....	23	19.1	.....
1915–16.												
1	13.6	10.7	10.7	9.9	100	41	45	25	22	18.6	17.4	13.5
2	13.8	11.5	10.7	12.9	100	41	45	25	22	18.6	17.4	13.2
3	13.5	11.7	10.7	11.9	100	41	45	25	22	18.6	17.4	12.9
4	13.2	11.8	11.9	10.8	100	39	41	25	22	18.6	17.4	12.9
5	13.5	11.5	10.7	11.0	80	39	41	25	22	18.6	17.4	12.7
6	13.8	11.9	11.0	11.0	80	39	39	25	22	18.6	15.1	12.9
7	13.8	11.7	10.7	10.7	70	39	39	25	22	18.6	17.4	12.9
8	13.5	11.5	10.7	10.3	60	38	37	25	22	18.6	15.2	12.9
9	13.5	11.9	10.7	11.5	60	40	37	25	22	18.6	14.3	12.4
10	13.5	11.9	10.7	11.5	51	40	37	25	22	18.6	15.0	12.9
11	13.5	11.8	10.7	11.9	40	41	37	23	22	18.6	16.0	12.4
12	13.2	11.7	10.7	11.2	30	41	37	23	22	18.6	15.2	12.4
13	13.2	11.2	10.7	11.2	30	41	37	23	22	18.6	15.2	12.2
14	13.2	11.5	11.9	11.2	30	42	35	23	22	18.6	15.0	11.4
15	13.2	11.5	11.4	11.7	30	42	35	23	22	18.6	15.0	11.1
16	12.9	11.5	10.7	11.5	25	41	31	23	22	18.6	14.7	12.2
17	12.9	11.5	10.7	18.6	25	42	31	23	22	18.6	14.6	12.1
18	12.7	11.5	10.3	.....	22	42	31	22	22	18.6	14.7	12.2
19	12.7	11.5	10.3	.....	41	42	29	22	22	18.0	14.7	11.9
20	12.7	11.2	10.3	.....	41	43	29	23	22	18.0	14.7	11.9
21	12.4	11.2	10.2	.....	39	49	29	23	19.6	18.0	14.5	11.9
22	11.9	11.2	10.2	300	39	49	29	23	19.6	17.7	14.1	11.9
23	11.5	11.0	10.2	200	39	49	29	23	19.6	17.7	14.1	11.9
24	11.5	11.0	9.9	150	37	49	29	22	18.6	17.7	13.8	11.9
25	11.5	11.0	10.2	150	37	49	27	22	18.6	17.7	13.8	11.5
26	11.5	11.0	10.2	150	41	49	27	22	18.6	17.4	13.6	11.5
27	11.6	11.0	10.2	150	49	47	27	22	18.6	17.4	13.6	11.2
28	11.6	11.0	9.9	200	41	47	27	22	18.6	17.4	13.5	11.2
29	11.7	10.7	9.9	150	41	47	25	22	18.6	17.4	13.2	11.2
30	11.5	10.7	9.9	150	.....	47	25	22	18.6	17.4	13.5	11.7
31	11.3	.....	9.9	120	.....	45	.....	22	.....	17.4	13.5	.....

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Daily discharge, in second-feet, of San Antonio Creek near Upland, Calif., for 1901–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Day.	Oct.	Nov.	Dec.	Jan.
1916–17.					1916–17.				
1	11	13	11	12	16	14	12	12	12
2	14	13	12	12	17	14	12	12	12
3	14	13	12	12	18	14	12	12	12
4	14	12	12	12	19	14	12	12	14
5	14	14	12	12	20	14	12	12	13
6	15	14	12	12	21	14	12	12	13
7	15	13	12	12	22	14	12	12	14
8	15	13	12	12	23	14	12	11	14
9	15	13	12	12	24	14	12	17	14
10	15	13	12	12	25	12	12	17	13
11	15	13	12	12	26	12	12	14	13
12	15	13	12	12	27	12	12	12	13
13	14	12	12	12	28	12	12	12	13
14	14	12	12	12	29	13	12	12	13
15	14	12	12	12	30	13	12	12	13
					31	14	.....	12	13

Monthly discharge of San Antonio Creek near Upland, Calif., for 1901–1917.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1901.					1903–4—Contd.				
March 11–31	5.7	5.4	5.53	230	March	17.0	6.8	8.11	499
April	16	5.0	8.19	487	April	15.0	11.0	12.5	744
May	18	13	16.7	1,030	May	17	15.0	15.5	953
June	17	14	15.7	934	June	14	10	11.5	684
July	14	11	12.4	762	July	9.3	7.5	8.32	512
August	10	8.7	9.42	579	August	8.3	6.8	7.41	456
September	8.7	7.4	8.11	483	September	6.8	6.0	6.39	380
The period	.....	.....	.....	4,500	The year	17	3.4	8.73	6,340
1901–2.					1904–5.				
October	8.7	6.8	7.22	444	October	6.3	5.4	5.63	346
November	7.7	6.3	6.91	411	November 1–25	5.4	5.4	5.40	268
December	6.3	6.0	6.23	383	March	400	18	106	6,520
January	6.3	6.0	6.04	371	April	70	30	39.8	2,370
February	6.8	5.7	5.90	328	May	36	30	33.9	2,080
March	8.3	6.3	7.43	457	June	34	30	32.4	1,930
April	9.3	8.3	8.60	512	July	32	20	24.0	1,480
May	11	9.3	10.6	652	August	20	14	16.6	1,020
June	9.7	6.5	8.07	480	September	14	12	12.8	762
July	6.8	6.0	6.29	387	1905–6.				
August	6.1	5.2	5.45	335	October	12	10	11.2	689
September	5.3	4.6	4.90	292	November	13	10	11.3	672
The year	11	4.6	6.98	5,050	December	12	11	11.0	676
1902–3.					January	15	9.8	11.1	682
October	4.6	4.4	4.50	277	February	22	13	13.8	766
November	4.9	4.2	4.37	260	March	300	16	146	8,980
December	4.6	4.4	4.46	274	April	240	90	122	7,260
January	6.3	4.4	4.67	287	May	110	80	84.5	5,200
February	6.3	6.0	6.02	330	June	100	80	88.3	5,250
March 1–28	9.0	6.0	7.30	404	July	80	30	47.4	2,910
April (23 days)	200	14	30.2	1,385	August	30	22	28.2	1,730
May	16	16	16.0	984	September	22	15	17.3	1,030
June	20	16	18.6	1,110	The year	300	9.8	49.5	35,800
July	18	13	15.6	959	1906–7.				
August	12	9.9	11.1	682	October	15	13	13.5	830
September	9.9	9.0	9.25	550	November	13	12	12.0	714
1903–4.					December	18	12	13.4	824
October	8.7	7.4	7.94	488	January	32	16	25.4	1,560
November	7.4	7.1	7.27	433	February	60	32	47.0	2,610
December	7.1	6.6	6.90	424	March	160	60	121	7,440
January	6.6	6.9	6.56	403	April	130	100	113	6,720
February	8.4	3.4	6.31	363	May	100	70	89.7	5,520

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Monthly discharge of San Antonio Creek near Upland, Calif., for 1901-1917—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906-7—Contd.				
June	70	50	57.7	3,430
July	40	24	28.7	1,760
August	24	21	21.7	1,330
September	21	15	17.3	1,030
The year	160	12	46.7	33,800
1907-8.				
October	15	14	14.8	910
November	14	12	13.1	780
December	12	11	11.2	689
January	17	9.7	11.2	689
February	16	14	15.5	892
March	31	15	18.5	1,140
April	35	27	29.7	1,770
May	36	22	26.6	1,640
June	22	16	19.4	1,150
July	16	12	13.7	842
August	14	10	11.7	719
September	10	9.0	9.22	549
The year	36	9.0	16.2	11,800
1908-9.				
October	9.0	8.5	8.64	531
November	8.5	7.9	7.98	475
December	8.5	7.9	8.25	507
January	130	7.9	24.4	1,500
February	101	31	72.7	4,040
March	101	80	87.4	5,370
April	101	81	83.0	4,940
May	81	81	81.0	4,980
June	71	29	46.9	2,790
July	27	18	23.6	1,450
August	19	15	16.4	1,010
September	15	12	13.0	774
The year	130	7.9	39.2	28,400
1909-10.				
October	12	11	11.5	707
November	12	10	10.9	649
December	27	11	16.8	1,030
January 7-31	211	61	139	6,890
February	51	33	45.1	2,500
March	33	24	25.6	1,570
April	27	22	24.6	1,460
May	22	17	19.7	1,210
June	16	14	15.3	910
July	14	11	12.4	762
August	11	8.6	10.0	615
September	9.0	7.4	8.29	493
1910-11.				
October	7.8	7.0	7.60	467
November	7.9	7.2	7.59	452
December	7.4	7.0	7.29	448
January	61	6.6	14.3	879
February	41	25	27.7	1,540
March	321	35	85.9	5,280
April	43	36	39.3	2,340
May	36	29	32.6	2,000
June	29	23	26.6	1,580
July	23	20	21.2	1,300
August	19	14	16.6	1,020
September	15	12	13.2	786
The year	321	6.6	25.0	18,100
1911-12.				
October	13	11	11.9	732
November	11	9.5	10.1	601
December	9.5	8.8	9.07	558
January	8.8	7.8	8.23	506
February	7.8	6.9	7.66	441
March	20	7.3	15.1	928
April	28	16	21.2	1,260
1911-12—Contd.				
May	35	27	33.1	2,040
June	31	25	27.5	1,640
July	25	16	18.7	1,150
August	16	12	12.9	793
September	12	9.6	10.3	613
The year	35	6.9	15.5	11,300
1912-13.				
October	11.0	9.0	9.36	576
November	9.0	8.6	8.65	515
December	8.7	8.7	8.70	535
January	9.6	6.5	7.24	445
February	12.5	7.1	8.45	469
March	10.0	9.0	9.56	588
April	17.4	10.0	14.7	875
May	16.4	13.0	15.1	928
June	15.1	11.1	12.8	762
July	10.6	8.7	9.33	574
August	8.7	7.1	7.76	477
September	7.2	6.5	6.87	409
The year	17.4	6.5	9.88	7,150
1913-14.				
October	7.0	6.0	6.54	402
November	7.7	6.0	6.50	387
December	6.6	6.5	6.52	401
January	108	6.5	19.7	1 210
February	607	27	168	9,330
March	199	36	68.6	4,220
April	39	33	34.1	2,030
May	35	33	33.8	2,080
June	32	27	30.0	1,790
July	27	23	25.5	1,570
August	23	17.7	19.5	1,200
September	17.5	13.9	15.4	916
The year	607	6.0	35.3	25,500
1914-15.				
October	15.3	12.1	13.2	812
November	12.4	10.5	11.5	684
December	13.6	10.3	10.9	670
January	42	9.6	12.5	769
February	118	18.0	60.6	3,370
March	59	35	45.0	2,770
April	43	31	35.1	2,090
May	47	43	44.6	2,740
June	45	33	39.3	2,340
July	33	23	27.5	1,690
August	23	18.0	20.2	1,240
September	19.1	14.1	16.6	988
The year	118	9.6	27.8	20,200
1915-16.				
October	13.8	11.3	12.7	781
November	11.9	10.7	11.4	678
December	11.9	9.9	10.5	646
January	.....	.....	.....	.....
February	100	22	51.0	2,930
March	49	38	43.3	2,660
April	45	25	33.7	2,010
May	25	22	23.3	1,430
June	22	18.6	21.0	1,250
July	18.6	17.4	18.2	1,120
August	17.4	13.2	15.0	922
September	13.5	11.1	12.2	726
The year	.....	.....	.....	.....
1916-17.				
October	15	11	13.8	849
November	14	12	12.4	738
December	17	11	12.3	756
January	14	12	12.5	769

NOTE.—Tables of monthly discharge computed by U. S. Geological Survey.

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MISCELLANEOUS MEASUREMENTS OF SAN ANTONIO CREEK.

Discharge measurements of San Antonio Creek at diversion dam near Claremont, Calif., for 1888–1916.

[Made by F. E. Trask]

Date.	Discharge.
	Sec.-ft.
1888.	
July 16	22
1889.	
July 15	21
Aug. 1	18
15	16
Sept. 2	16
16	14
Oct. 1	13
17	14
Nov. 2	24
Dec. 2	33
1890.	
July 15	38
Aug. 1	32
15	27
Sept. 6	22
15	19
1891.	
July 15	20
Aug. 1	17
15	17
Sept. 1	13
Sept. 15	13
1892.	
July 15	12
Sept. 15	8.2
Nov. 19	7.1
1893.	
June 20	26
July 15	20
Aug. 15	15
Sept. 15	13
Oct. 15	11
Nov. 12	11
Dec. 16	11
1894.	
Mar. 24	11
May 11	11
July 16	6.0
1895.	
July 15	16
Aug. 22	17
Sept. 7	14
1896.	
June 25	6.6
July 15	5.8
Sept. 15	5.4
Nov. 2	6.4
Dec 26	6.0
1897.	
Jan. 25	6.6
Feb. 8	9.8
22	16
July 6	18
19	14
Aug. 2	13
16	11
Sept. 6	10
Oct. 4	9.2
1898.	
Mar. 16	8.8
Apr. 4	9.1
May 4	9.3
1898.	
June 6	8.3
July 5	5.9
Aug. 15	5.1
Sept. 5	4.6
Oct. 2	4.9
Nov. 6	4.3
Dec. 5	4.6
1899.	
Jan. 3	5.1
Feb. 6	5.4
Mar. 6	4.9
Apr. 5	5.7
May 1	5.1
July 3	3.3
Aug. 7	4.3
Sept. 3	4.5
Oct. 2	3.7
1900.	
Jan. 1	5.3
Feb. 1	6.1
Mar. 5	6.4
Apr. 1	5.1
May 7	6.1
June 4	5.5
July 1	4.8
Aug. 6	3.9
Sept. 1	3.6
Oct. 8	3.1
1902.	
June 28	6.8
July 5	7.3
Aug. 2	5.2
Sept. 6	4.3
Oct. 4	4.3
1903.	
Jan. 19	4.4
Mar. 16	9.2
Apr. 24	72
June 25	26
July 29	14
Aug. 24	11
Oct. 6	9.7
Dec. 1	7.9
1904.	
Jan. 22	7.8
Feb. 8	7.7
Mar. 5	7.9
Apr. 6	15
June 4	14
July 8	10
Aug. 11	7.6
Sept. 7	6.7
Oct. 7	6.3
Nov. 5	5.8
Dec. 9	5.8
1905.	
Jan. 19	7.3
Mar. 6	18
Apr. 4	80
May 8	58
June 10	42
July 15	24
Aug. 8	10
Sept. 11	14
Oct. 11	12
Nov. 9	15
Dec. 9	13
1906.	
Jan. 17	12
Feb. 9	16
Mar. 5	18
Apr. 9	166
May 3	83
June 2	87
July 10	35
Aug. 9	25
Sept. 8	19
Oct. 5	18
Nov. 2	15
Dec. 14	18
1907.	
Jan. 14	42
Feb. 11	64
Apr. 13	167
May 11	97
June 6	78
July 10	39
Aug. 7	28
Sept. 6	21
Oct. 5	21
Nov. 8	17
Dec. 7	17
1908.	
Jan. 11	12
Feb. 22	23
Mar. 16	23
Apr. 6	32
May 8	31
June 6	25
July 6	18
Aug. 6	15
Sept. 4	11
Oct. 9	9.8
Nov. 8	9.7
Dec. 3	10
1909.	
Jan. 10	9.9
Feb. 13	247
Mar. 14	69
Apr. 11	97
May 10	85
June 5	50
July 12	25
Aug. 3	21
Sept. 13	16
Oct. 12	14
Nov. 5	12
Dec. 13	25
1910.	
Jan. 19	77
Feb. 14	45
Mar. 9	20
Apr. 10	26
May 7	24
June 10	16
July 10	14
Aug. 9	12
Sept. 4	11
Oct. 3	9.2
Nov. 5	9.2
Dec. 10	8.5
1911.	
Jan. 14	11
Feb. 6	75
Mar. 16	Flood.
May 2	61

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Discharge measurements of San Antonio Creek at diversion dam near Claremont, Calif., for 1888–1916—Continued.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
1911.	*Sec.-ft.*	1913.	*Sec.-ft.*	1914.	*Sec.-ft.*
June 5	66	Jan. 19	11	Oct. 10	15
July 10	24	Feb. 5	10	Nov. 14	14
Aug. 8	16	Mar. 2	14	Dec. 5	14
Sept. 11	13	Apr. 10	18	1915.	
Oct. 12	13	May 6	19	Jan. 11	13
Nov. 3	13	June 9	16	Feb. 8	33
Dec. 10	13	July 13	11	Mar. 8	50
1912.		Aug. 1	9.6	Apr. 10	66
Jan. 7	12	Sept. 8	7.7	May 10	63
Feb. 10	10	Oct. 3	7.4	June 8	69
Mar. 17	19	Nov. 10	7.2	10	35
Apr. 6	19	Dec. 3	8.6	Aug. 12	23
May 4	39	1914.		Sept. 4	21
June 8	28	Jan. 13	8.2	Oct. 6	16
July 6	22	Feb. 6	72	Nov. 8	15
Aug. 3	16	Mar. 4	133	Dec. 7	14
Sept. 3	14	Apr. 11	82	1916.	
Oct. 20	12	June 4	51	Jan. 8	13
Nov. 16	11	July 11	29	Feb. 7	96
Dec. 8	9.8	Aug. 11	19	Mar. 8	112
		Sept. 12	16	Apr. 7	73

NOTE.—Measurements made by F. E. Trask furnished in miner's inches: converted by U. S. Geological Survey engineers, assuming on basis that 50 miner's inches equal 1 second-foot.

Discharge measurements of San Antonio Creek, San Bernardino County, Calif., for 1896–1903.

Date.	Made by—	Locality.	Discharge.
			Sec.-feet.
July 23, 1896	J. H. Quinton	Mouth of Canyon	7.9
Do	do	Ontario water from tunnel	1.88
July 2, 1898	F. H. Olmsted	Mouth of canyon	6.59
Do	do	In creek at Pierce's camp	3.36
Aug. 26, 1898	do	Division wier	5.18
Aug. 25, 1899	S. G. Bennett	Mouth of canyon	4.48
July 11, 1900	do	do	4.07
Sept. 25, 1900	W. W. Cockins, jr.	Division wier	3.72
Oct. 7, 1900	S. G. Bennett	do	5.99
Apr. 3, 1902	do	do	11.4
Apr. 1, 1903	W. B. Clapp	Mouth of canyon	854
Do	Clapp and Clausen	do	57
Do	do	1 mile below Southern Pacific Railway	0
May 25, 1903	W. B. Clapp	Mouth of canyon	34
Do	do	Southern Pacific Railway	0
July 3, 1903	do	Mouth of canyon	19.5
Sept. 13, 1903	do	do	11
Sept. 23, 1904	do	do	6.4
1902.			
June 23	J. B. Lippincott	Baby Ruth weir	7.69
July 12, 11.40 a.m.	do	do	6.88
12, 1.13 p.m.	do	do	6.58
Aug. 2, 11.15 a.m.	do	do	6.15
9, 11 a.m.	do	do	6.15
9, 1.12 p.m.	do	do	5.99
29, 11.45 a.m.	do	do	5.61
Sept. 29, 12.30 p.m.	do	do	4.88
Oct. 18, 12.30 p.m.	do	do	4.74
June 28	do	Division weir	6.56
28	do	Gird water	.42
			6.98
July 12, 10.58 a.m.	do	Division weir	5.76
12	do	Gird water	.35
			6.11
12, 2.40 p.m.	do	Division weir	5.20
12	do	Gird water	.35
			5.55

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Discharge measurements of San Antonio Creek, San Bernardino County, Calif., for 1896–1905—Continued.

Date.	Made by—	Locality.	Discharge.
1902.			*Sec.-feet.*
Aug. 2, 10.30 a. m.	J. B. Lippincott	Division weir	4.83
2	do	Gird water	.36
			5.19
2, 2.30 p. m.	do	Division weir	4.35
2	do	Gird water	.36
			4.71
9, 10.18 a. m.	do	Division weir	4.76
9	do	Gird water	.35
			5.11
9, 2.40 p. m.	do	Division weir	4.18
9	do	Gird water	.35
			4.53
29, 10.55 a. m.	do	Division weir	4.26
29	do	Gird water	.38
			4.64
29, 2.27 p. m.	do	Division weir	3.55
29	do	Gird water	.38
			3.93
Sept. 27, 10.30 a. m.	do	Division weir	4.00
27	do	Gird water	.33
			4.33
27, 2.15 p. m.	do	Division weir	3.57
27	do	Gird water	.33
			3.90
Oct. 18, 10.55 a. m.	do	Division weir	3.98
18	do	Gird water	.38
			4.36
June 28	do	Fountain of Life spring—weir measurement	.34
July 12, 12.15 p. m.	do	do	.34
Aug. 2, 12.05 p. m.	do	do	.30
9, 11.42 a. m.	do	do	.32
29, 12.20 p. m.	do	do	.29
Sept. 27, 11.33 a. m.	do	do	.29
Oct. 18, 12 m.	do	do	.30
June 28	do	San Antonio tunnel—weir measurement	1.88
July 12, 10.36 a. m.	do	do	1.27
Aug. 2, 10.10 a. m.	do	do	1.19
9, 10 a. m.	do	do	1.17
30, 10.30 a. m.	do	do	1.15
Sept. 27, 10.12 a. m.	do	do	1.12
June 28	do	San Gabriel Electric Co.'s power house—concrete weir basin—weir measurement.	7.40
July 12, 12.20 p. m.	do	do	6.10
Aug. 2, 12 m.	do	do	5.59
9, 11.48 a. m.	do	do	5.67
29, 12.30 p. m.	do	do	4.59
Sept. 27, 11.37 a. m.	do	do	4.64
Oct. 13, 11.38 a. m.	do	do	4.31
1902.			
June 28	J. B. Lippincott	San Gabriel Electric Co.'s power house—weir measurement in creek.	.55
July 12, 12.33 p. m.	do	do	.47
Aug. 2, 12.10 p. m.	do	do	.40
9, 12.11 p. m.	do	do	.40
29, 12.40 p. m.	do	do	.35
Sept. 27, 12 m.	do	do	.36
Oct. 18, 12 m.	do	do	.39
Aug. 2, 11.45 a. m.	do	Spring Hill weir	6.31
9, 11.22 a. m.	do	do	6.36
9, 1 p. m.	do	do	5.88
29, 12.07 p. m.	do	do	5.59
29, 12.10 p. m.	do	do	5.40
Sept. 27, 12.05 p. m.	do	do	5.28
Oct. 18, 12.12 p. m.	do	do	5.01

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Weir measurements of San Antonio Creek at division box, Calif., for 1892–1903.

[Measurments by F. E. Trask.]

Date.	Discharge.
	Second-feet.
1892.	
July 15	12.50
Sept. 15	8.16
Nov. 19	7.09
1893.	
Aug. 14	14.30
30	12.72
Sept. 25	12.16
Oct. 25	10.84
1894.	
July 16	6.00
1895.	
July 15	18.48
Aug. 22	16.78
Sept. 7	14.20
1896.	
June 25	6.58
July 15	5.20
Sept. 15	5.44
1897.	
July 6	17.24
Aug. 16	10.82
1897.	
Sept. 20	9.24
1898.	
July 5	5.24
Aug. 1	4.72
Sept. 5	4.24
1899.	
July 3	2.98
Aug. 7	3.88
Sept. 3	4.06
1900.	
July 1	4.36
Aug. 6	3.54
Sept. 1	3.22
1902.	
July 21	5.30
Aug. 16	4.22
Sept. 13	3.40
1903.	
Aug. 10	9.40
16	7.66

July 18, 1888, float measurement by F. E. Trask showed 22.12 second-feet discharge for entire creek above division. (Excludes gird water=0.4 second-feet. Gird water purchased by the San Antonio Water Co., May, 1896, and diverted above division weir.)

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Discharge measurements of San Antonio tunnel at the portal, Calif., for 1888–1904.

[Measurement by F. E. Trask.]

Date.	Discharge.
	Second-feet.
1888.	
Apr. 2	4.84
15	2.32
Oct. 10	.73
1889.	
Jan. 10	1.61
May 31	1.33
June 17	1.26
July 15	.91
Aug. 15	.61
Sept. 2	.61
Oct. 1	.57
Nov. 2	.86
Dec. 2	.81
1890.	
Jan. 27	5.58
June 12	2.57
July 15	2.49
Aug. 15	2.23
Sept. 15	1.36
1891.	
July 15	4.93
Aug. 15	3.55
Sept. 15	2.74
1892.	
July 16	3.49
Sept. 15	2.98
1893.	
July 15	5.03
1894.	
May 11	2.72
July 16	2.75
1895.	
July 15	1.79
Aug. 22	1.53
Sept. 7	1.45
1896.	
June 25	1.62
July 15	1.52
Sept. 15	1.19
1897.	
Jan. 25	1.93
July 19	2.08
Aug. 2	1.72
1897.	
Sept. 6	1.32
Oct. 4	1.19
1898.	
Mar. 16	1.30
Apr. 4	1.20
May 4	1.21
June 6	1.42
July 5	1.23
Aug. 1	1.12
Sept. 5	1.06
Oct. 2	.97
Nov. 6	1.02
Dec. 5	1.05
1899.	
Jan. 3	1.08
May 1	1.09
July 3	.97
Aug. 7	.95
Dec. 31	1.24
1900.	
Feb. 1	1.14
Mar. 5	1.07
Apr. 1	1.01
May 7	1.00
July 1	1.00
Oct. 8	1.00
1902.	
June 28	1.35
July 5	1.32
Aug. 2	1.19
Sept. 6	1.14
Oct. 4	1.08
1903.	
Jan. 19	.92
Mar. 16	1.29
Apr. 24	4.86
July 29	1.51
Aug. 24	1.25
Oct. 6	.99
Dec. 1	1.07
1904.	
Jan. 22	1.07
Feb. 8	1.07
Apr. 6	2.32
May 28	1.60
June 4	1.47

SOUTHERN CALIFORNIA EDISON CO.'S CANAL NEAR CLAREMONT, CALIF.

LOCATION.—In NW. ¼ sec. 1, T. 1 N., R. 8 W., at weir in tailrace of Sierra power house, on San Antonio Creek, 1½ miles below intake, and 8 miles northeast of Claremont, Los Angeles County.

RECORDS AVAILABLE.—January 1, 1917, to September 30, 1918.

GAGE.—Hook gage, which indicates head on weir; read by B. F. Campbell, operator at power house.

DISCHARGE.—Computed from head on 10-foot rectangular weir.

ACCURACY.—Gage is read at 8 a. m. and 4 p. m. Discharge computed from weir table by observer. Records good.

COOPERATION.—Discharge record furnished by Southern California Edison Co.

Canal diverts water from San Antonio Creek in the SE. ¼ sec. 25, T. 2 N., R. 8 W., 1 mile above gaging station on San Antonio Creek near Claremont. The water is used for power development at Sierra power house, in NW. ¼ sec. 1, T. 1 N., R 8 W., and is then returned directly to creek.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Claremont, Calif., for 1917–18.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917.												
1	.....	.....	.....	12	13	21	21	21	21	19	15.5	12.5
2	.....	.....	.....	12	13	21	21	21	21	19.5	15.5	12.5
3	.....	.....	.....	12	13	21	21	21	21	19	15.5	12
4	.....	.....	.....	12	13	21	21	21	21	19	15.5	12.5
5	.....	.....	.....	12	13	21	21	21	21	19	15.5	12.5
6	.....	.....	.....	12	13	21	21	21	21	19	15.5	12
7	.....	.....	.....	12	13	21	21	21	21	19	15	12
8	.....	.....	.....	12	13	21	21	21	21	19	15	12
9	.....	.....	.....	12	13	21	21	21	21	18	15	12
10	.....	.....	.....	12	13	21	21	21	21	18	14.5	11
11	.....	.....	.....	12	13	21	21	21	21	18	14.5	11.5
12	.....	.....	.....	12	13	21	21	21	21	18	15	11.5
13	.....	.....	.....	12	13	21	21	21	21	17.5	14.5	11
14	.....	.....	.....	12	13	21	21	21	21	17.5	14.5	11.5
15	.....	.....	.....	12	13	21	21	21	21	17	14	11
16	.....	.....	.....	12	13.5	21	21	21	21	17	14	11.5
17	.....	.....	.....	12	14.5	21	21	21	19	17	14	11
18	.....	.....	.....	12	14.5	21	21	21	19	17	14	11
19	.....	.....	.....	14.5	14.5	21	21	21	19	17	13.5	11
20	.....	.....	.....	13	15	21	21	21	19	16	13.5	11
21	.....	.....	.....	13	15.5	21	21	21	19	16	13	11
22	.....	.....	.....	13.5	18.5	21	21	21	19	16	13	11
23	.....	.....	.....	13.5	17.5	21	21	21	19	16	13.5	11
24	.....	.....	.....	13.5	17.5	21	21	21	19	16	13	11.5
25	.....	.....	.....	13	21	21	21	21	19	15	13	11
26	.....	.....	.....	13	21	21	21	21	19	16	13	10.5
27	.....	.....	.....	13.5	21	21	21	21	19	18	13	11
28	.....	.....	.....	13.5	21	21	21	21	19	17.5	13	10.5
29	.....	.....	.....	13	.....	21	21	21	19	17	13	11
30	.....	.....	.....	13	.....	21	21	21	19	16.5	13	11
31	.....	.....	.....	13	.....	21	.....	21	.....	16.5	12.5	.....
1917–18.												
1	11.2	9.5	8.9	8.2	7.4	9.5	19.4	19.4	19.4	18.6	15.1	11.6
2	11.2	9.4	9.1	8.2	7.8	9.4	19.4	19.4	19.4	18.7	14.6	11.5
3	10.2	9.4	9.1	8.2	7.8	9.4	19.4	19.4	19.4	18.5	14.2	11.7
4	10.7	9.5	9.0	8.1	7.7	9.5	19.4	19.4	19.4	18.3	14.1	11.3
5	10.4	9.5	9.1	8.2	7.8	10.0	19.4	19.4	19.4	18.3	14.3	11.2
6	10.1	10.5	9.0	8.1	7.6	12.2	19.4	19.4	19.4	18.1	13.8	11.3
7	10.1	10.0	9.0	8.0	7.8	19.6	19.4	19.4	19.4	17.8	14.1	11.2
8	10.1	9.6	9.0	8.1	7.6	19.7	19.4	19.4	19.4	17.8	14.0	11.0
9	10.5	9.5	9.0	7.9	7.6	20.3	19.4	19.4	19.4	17.6	14.0	11.2
10	10.1	9.5	8.9	8.0	7.6	20.4	19.4	19.4	19.4	17.4	13.8	11.0
11	10.1	9.6	9.0	8.1	7.6	20.3	19.4	19.4	19.4	17.4	13.4	11.0
12	10.3	9.5	9.0	8.0	7.6	20.2	19.4	19.4	19.4	17.3	13.5	11.0
13	10.2	9.5	8.9	8.1	7.6	20.2	19.4	19.4	19.4	17.1	13.4	11.0
14	10.4	9.3	8.8	8.0	7.6	20.3	19.4	19.4	19.4	17.4	13.4	10.9
15	10.4	9.5	9.0	8.1	7.6	20.1	19.4	19.4	19.4	17.0	13.6	11.2
16	10.4	9.5	8.8	8.1	7.5	19.6	19.4	19.4	19.4	16.5	13.5	11.1
17	10.2	9.4	8.6	7.8	7.6	19.5	19.4	19.4	19.4	16.5	13.3	10.8
18	10.2	9.2	8.5	7.9	7.8	19.6	19.4	19.4	19.4	16.0	13.2	10.8
19	10.2	9.0	8.5	7.9	7.6	19.6	19.4	19.4	19.4	15.9	13.1	10.6
20	10.0	9.0	8.7	7.9	7.9	19.6	19.4	19.4	19.4	16.0	13.0	10.6
21	9.8	9.1	8.5	7.8	10.3	19.6	19.4	19.4	19.4	15.6	12.6	10.6
22	9.4	8.9	8.4	7.9	16.1	19.6	19.4	19.4	19.3	15.4	12.8	10.6
23	9.7	9.2	8.6	8.0	11.0	19.6	19.4	19.4	18.9	15.9	12.7	10.6
24	9.7	9.2	8.4	7.8	10.6	19.6	19.4	19.4	19.1	15.3	12.5	10.3
25	9.9	9.1	8.4	8.5	10.1	19.6	19.4	19.4	18.9	15.2	12.3	10.3
26	9.9	9.0	8.2	8.2	10.6	19.6	19.4	19.4	19.2	15.1	12.4	10.2
27	9.9	9.1	8.4	8.0	10.1	19.6	19.4	19.4	19.4	15.0	12.0	11.1
28	9.5	9.1	8.3	7.9	9.6	19.6	19.4	19.4	19.0	15.0	12.3	10.6
29	9.4	9.0	8.3	7.8	.....	19.6	19.4	19.4	18.8	14.9	12.3	10.5
30	9.5	8.9	8.2	7.8	.....	19.6	19.4	19.4	18.6	14.5	11.8	10.4
31	9.7	.....	8.1	7.8	.....	19.6	.....	19.4	.....	14.5	11.9	.....

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Monthly discharge of Southern California Edison Co.'s canal near Claremont, Calif., for 1917–18.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1917.					1917–18.				
January	14.5	12	12.5	769	October	11.2	9.4	10.1	621
February	21	13	15.0	833	November	10.5	8.9	9.35	556
March	21	21	21.0	1,290	December	9.1	8.1	8.70	535
April	21	21	21.0	1,250	January	8.5	7.8	8.01	493
May	21	21	21.0	1,290	February	16.1	7.4	8.62	479
June	21	19	20.1	1,200	March	20.4	9.4	17.9	1,100
July	19.5	15	17.5	1,080	April	19.4	19.4	19.4	1,150
August	15.5	12.5	14.1	867	May	19.4	19.4	19.4	1,190
September	12.5	10.5	11.4	678	June	19.4	18.6	19.3	1,150
					July	18.7	14.5	16.6	1,020
The period				9,260	August	15.1	11.8	13.3	818
					September	11.7	10.2	10.9	649
					The year	20.4	7.4	13.5	9,760

CHINO CREEK AT RINCON, CALIF.

San Antonio Creek discharges from the southern slope of the Sierra Madre upon a large bed of sand and gravel. The underground waters percolate slowly to the south, and begin to appear again in the channel of what is known as Chino Creek. This creek enters Santa Ana River just before that stream passes through its lower canyon in the Coast Range. The discharge of Chino Creek is very constant, owing to the nature of its supply, and hence water rights along its course are valuable on account of their permanence. A series of measurements of the supply of this creek have been made and are published herewith.

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Discharge measurements of Chino Creek near Rincon, Calif., for 1898–1907.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
1898.		*Sec.-feet.*	1903.		*Sec.-feet.*
Aug. 30	F. H. Olmsted	4.95	Apr. 29	O. W. Peterson	23
1899.			May 18	W. B. Clapp	15
May 2	F. Rolfe	12.8	June 12	do	6.5
15	do	8.64	July 23	do	3.4
June 3	do	17.0	Aug. 19	do	2.4
15	do	5.63	Sept. 23	do	3.3
July 4	do	3.02	Oct. 30	do	6
17	do	4.68	Nov. 25	do	9.2
Aug. 1	do	7.49			
15	do	2.14	1904.		
31	do	3.19	Jan. 26	W. B. Clapp	14.7
Sept. 13	J. B. Lippincott	3.53	Feb. 29	do	24
29	do	3.88	Mar. 21	Clapp and Murphy	16
Oct. 25	do	14.5	Apr. 29	W. B. Clapp	15
26	F. Rolfe	14.5	May 23	do	4.3
Nov. 18	do	20.1	June 20	Clapp and Hardy	2
1900.			July 23	E. C. La Rue	1.5
Jan. 18	F. Rolfe	24.1	Aug. 20	do	1.6
29	do	27.0	Sept. 20	W. B. Clapp	2.8
Feb. 21	do	13.4	28	E. C. La Rue	3.6
Apr. 17	W. P. Searcy	8.8	Oct. 22	do	5.6
June 24	do	4.0	Nov. 19	do	8.3
July 7	do	2.1	Dec. 10	do	8.7
28	S. G. Bennett	2.2	1905.		
Aug. 15	W. P. Searcy	1.1	Feb. 24		46
Sept. 3	do	0	Apr. 17		26
Oct. 5	W. W. Cockins, jr	5.0	May 16		17
16	W. P. Searcy	.4	June 6		6
Nov. 5	do	14.4	July 29		1.1
Dec. 4	do	17.1	Sept. 21		1.9
31	do	16.6	1906.		
1901.			June 25		3.9
Aug. 31	J. B. Lippincott	2.8	Aug. 31		2.6
1903.			Nov. 7		10.3
Mar. 31	W. B. Clapp	146	1907.		
			Aug. 23		2.6

CUCAMONGA CREEK.

Discharge measurements of tributaries of Cucamonga Creek around Red Hill, Calif., for 1898–1900.

Date.	Made by—	Locality.	Discharge.
			Sec.-feet.
Sept. 9, 1898	O. J. Sutton	Springs	2.20
Do	do	Tunnels	2.80
Do	do	Artesian wells	1.80
Total			6.80
Aug. 29, 1899	S. G. Bennett	From Stowell wells to Ontario	2.48
July 11, 1900	do	East side	4.03
Do	do	West side	2.97
Do	do	San Antonio water, Haskell well	2.13
Do	do	Sixteenth Street wells	1.72
Total from Red Hills			10.85

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MISCELLANEOUS MEASUREMENTS.

Measurements of discharge in the Santa Ana River basin at points other than those at which gaging stations have been maintained are recorded in the following table:

Discharge measurements of Santa Ana River for 1888-1915.

Date.	Made by—	Locality.	Discharge.
			Sec.-ft.
July 27, 1896	J. H. Quinton	Above mouth of Bear Creek	14.2
Aug. 31, 1897	A. Q. Campbell	do	17.9
Nov. 14, 1897	J. B. Lippincott	do	17.5
June 17, 1898	F. H. Olmsted	Below Jurupa ditch	9.7
July 27, 1900	S. G. Bennett	Below Roubidoux, Evans Upper, and Trujillo ditches	.44
Oct. 25, 1900	K. Sanborn	do	.56
Aug. 27, 1898	F. H. Olmsted	1½ miles below intake of Riverside Water Co.'s lower canal.	.50
Aug. 28, 1898	do	Below West Riverside bridge	3.85
July 30, 1900	S. G. Bennett	do	1.16
Oct. 25, 1900	K. Sanborn	do	8.45
Aug. 30, 1901	J. B. Lippincott	do	1.19
Aug. 30, 1899	S. G. Bennett	2 miles below West Riverside bridge	5.6
Oct. 25, 1900	K. Sanborn	1,000 feet below Roubidoux bridge	.56
June 22, 1888	F. H. Olmsted	Near Rincon	34.7
Sept. 15, 1899	J. B. Lippincott	do	27.9
Oct. 26, 1899	do	do	17.1
Aug. 15, 1900	W. P. Searcy	do	18.4
Sept. 3, 1900	do	do	18.2
Sept. 22, 1900	do	do	16.7
Oct. 16, 1900	do	do	30
Nov. 5, 1900	do	do	29
Aug. 31, 1901	do	do	23.1
July 17, 1888	F. C. Finkle	Auburndale bridge	14.6
Aug. 22, 1888	do	do	13.3
Sept. 15, 1888	do	do	14.2
Aug. 14, 1889	do	do	15.6
Sept. 28, 1889	do	do	16.7
Aug. 30, 1890	do	do	22.3
Sept. 10, 1891	do	do	25.6
Sept. 11, 1892	do	do	43.4
June 21, 1898	F. H. Olmsted	Auburndale bridge, including ditches	60
Aug. 30, 1899	S. G. Bennett	do	53.1
Sept. 2, 1899	J. B. Lippincott	Auburndale bridge	59.8
July 28, 1900	S. G. Bennett	Auburndale bridge, including ditches	54.4
Oct. 5, 1900	W. W. Cockins, jr.	do	69.7
Aug. 27, 1901	J. B. Lippincott	Auburndale bridge, above Robert's ditch	43.7
Aug. 31, 1901	do	do	28.5
Sept. 23, 1903	W. B. Clapp	Auburndale bridge	58
Oct. 26, 1899	J. B. Lippincott	Opposite Esperanza station	49.2
Aug. 30, 1901	do	Above Fuller's ditch	24.3
Aug. 31, 1901	do	Newberry's east line	40.7
July 16, 1888	F. C. Finkle	Riverside Narrows	10.1
July 17, 1888	do	do	10.5
Aug. 21, 1888	do	do	8.5
Sept. 14, 1888	do	do	9.5
Aug. 13, 1889	do	do	11
Sept. 27, 1889	do	do	11.2
Aug. 12, 1890	do	do	18.8
Sept. 9, 1891	do	do	15.5
Sept. 10, 1892	do	do	29.4
June 20, 1898	F. H. Olmsted	do	47.6
Aug. 29, 1898	do	do	39
July 17, 1899	F. Rolfe	do	31.7
Sept. 9, 1899	J. B. Lippincott	do	39.7
July 27, 1900	S. G. Bennett	do	38.4
Oct. 25, 1900	K. Sanborn	do	70.6
Aug. 30, 1901	J. B. Lippincott	do	33.9
Apr. 22, 1903	Clapp and Clausen	Colton bridge	13
May 18, 1903	W. B. Clapp	do	0
May 15, 1903	Clapp and Mylne	Orange Avenue	30
Apr. 14, 1905		do	76
May 15, 1903	Clapp and Mylne	¼ mile below Orange Avenue	0
Apr. 29, 1903	O. W. Peterson	1 mile above heading of Santa Ana and Anaheim canals	214
Sept. 23, 1903	W. B. Clapp	Heading	72
Sept. 28, 1904	E. C. La Rue	do	66
Apr. 29, 1903	O. W. Peterson	2 miles below heading	185
Apr. 30, 1903	do	2 miles above Yorba	130
Do	do	¼ mile above Yorba	141
May 1, 1903	do	¼ mile above Southern California Ry. crossing at Olive	51
Do	do	¼ mile below crossing	0
Aug. 9, 1915	F. C. Ebert	Pedley power house near Arlington	24
Sept. 6, 1915	do	do	27
Aug. 9, 1915	do	Salt Lake R. R. bridge near Arlington	34
Sept. 6, 1915	do	do	33

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Discharge measurements of Santa Ana River at Rincon wagon bridge, San Bernardino County, Calif., for 1899–1907.

Date.	Made by—	Discharge.
		Sec.-ft.
1899.		
Sept. 13	J. B. Lippincott	72.6
Oct. 25	do	130
26	do	147
Nov. 18	do	151
Dec. 28	do	165
1900.		
Jan. 18		224
29		184
Feb. 21		162
Apr. 17	W. P. Searcy	102
June 24	do	69.2
July 7	do	84.5
28	S. G. Bennett	80.8
Aug. 15	W. P. Searcy	87.1
Sept. 3	do	88.2
Oct. 5	W. W. Cockins, jr	74.2
16		122
Nov. 5		117
Dec. 4		338
31		210
1901.		
Aug. 27	J. B. Lippincott	78.6
31	do	65.3
1902.		
Sept. 2	W. B. Clapp	74.9
1903.		
Mar. 31	W. B. Clapp	400
Apr. 29	O. W. Peterson	193
May 18	W. B. Clapp	108
June 12	do	85
July 23	do	59
1903.		
Aug. 19	W. B. Clapp	60
Sept. 23	do	78
Oct. 30	do	93
Nov. 25	do	102
1904.		
Jan. 26	W. B. Clapp	109
Feb. 29	do	162
Mar. 21	Clapp and Murphy	107
Apr. 29	W. B. Clapp	96
May 23	do	82
June 20	Clapp and Hardy	63
July 23	E. C. La Rue	62
Aug. 20	do	69
Sept. 29	W. B. Clapp	74
28	E. C. La Rue	75
Oct. 22	do	78
Nov. 19	do	108
Dec. 10	do	110
1905.		
Feb. 24		205
Apr. 17		172
May 16		115
June 6		87
July 29		70
Sept. 21		76
1906.		
June 25		82
Aug. 3		56
Nov. 7		94
1907.		
Aug. 23		63

Discharge measurements of Santa Ana River 1 mile below railroad bridge, Rincon, Calif., for 1898–1900.

Date.	Hydrographer.	Discharge.			Date.	Hydrographer.	Discharge.		
		River.	Canal.	Total for river.			River.	Canal.	Total for river.
		Sec.-ft.	*Sec.-ft.*	*Sec.-ft.*			*Sec.-ft.*	*Sec.-ft.*	*Sec.-ft.*
1898.					**1899.**				
June 21	F. H. Olmsted	79.8	3.2	83	June 3	F. Rolfe	110	3.2	113
Aug. 29	do	62.7	4.2	66.9	15	do	84.4	1.9	86.3
1899.					July 4	do	68.9	2.4	71.3
Jan. 3	S. G. Bennett	209	2.3	211	16	Bennett and Rolfe	101	1.9	103
16	F. Rolfe			232	16	do	87.9	1.6	89.5
28	do	216	6.5	222	18	F. Rolfe	64.1	1.5	65.6
Feb. 15	do	181	1.8	183	Aug. 1	do	57.8	3.4	61.2
Mar. 4	do			169	15	do	64.7	3.2	67.9
18	do			200	30	do	65.9	2	67.9
Apr. 6	do			172	31	do	68	3.1	71.1
18	do	101	2.8	104	Sept. 13	J. B. Lippincott	72.7		
May 2	do	100	2.4	102	**1900.**				
May 15	do	100	4	104	Apr. 16	S. G. Bennett			90.9

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Miscellaneous discharge measurements of tributaries and canals in Santa Ana River drainage basin for 1896–1918.

Date.	Stream.	Locality.	Discharge.
			Sec.-ft.
July 27, 1896	Bear Creek		70.6
Aug. 31, 1897	do		54.3
Nov. 14, 1897	do		8.95
Do	Keller Creek		1.00
Apr. 14, 1900	do		.67
Aug. 27, 1912	do	Mouth, in NW. ¼ sec. 26, T. 1 N., R. 2 W.	[a] .1
Aug. 8, 1897	Alder Creek		.88
Aug. 31, 1897	do		1.00
Nov. 14, 1897	do		2.00
Apr. 14, 1900	do		1.90
Oct. 8, 1901	do		.89
Aug. 27, 1912	do	Southern California Edison Co.'s flume near intake, one-fourth mile above mouth, in NE. ¼ sec. 27, T. 1 N., R. 2 W.	
Jan. 31, 1918	Southern California Edison Co's. canal.	200 feet above fore bay at Mentone power plant	44
Apr. 12, 1898	Morton Creek	Near mouth	.20
Apr. 29, 1898	do	do	.20
June 12, 1898	do	do	.12
May 31, 1899	do	do	.23
June 15, 1899	do	do	.17
July 15, 1899	do	do	.12
Aug. 24, 1899	do	do	.11
Apr. 14, 1900	do	do	.29
July 13, 1900	do	do	.09
Oct. 2, 1900	do	do	.12
Aug. 31, 1903	do	do	.20
May 28, 1904	do	do	.13
Sept. 21, 1904	do	do	.14
Sept. 22, 1905	do	do	.16
July 15, 1899	Mill Creek	Redlands Power Co., lower intake	8.9
Oct. 2, 1900	do	do	7.3
Mar. 22, 1904	do	Weir at Edison electric power house, Nos. 2 and 3.	17.6
Sept. 21, 1904	do	do	14.1
Nov. 11, 1904	do	do	11.2
Apr. 14, 1905	do	Road crossing between Mentone and Santa Ana Canyon.	46
June 26, 1907	do	Above upper division, Edison Electric Co.	61
Sept. 18, 1907	do	Below power plant No. 1, Edison Electric Co.	33
July 14, 1900	San Timoteo Creek	Bicknell station	1.50
Oct. 23, 1912	Redlands canal	Flume on trestle crossing at Mill Creek	31
June 12, 1898	Plunge Creek	Headworks in canyon	2.30
Sept. 9, 1898	do	do	.20
Mar. 25, 1899	do	do	10.90
Aug. 25, 1899	do	do	.50
July 12, 1900	do	do	.34
Apr. 7, 1902	do	do	12.40
Sept. 4, 1902	do	do	.37
Apr. 23, 1903	do	do	23
May 17, 1903	do	do	9
Sept. 11, 1903	do	do	.6
Sept. 21, 1904	do	do	.6
Sept. 22, 1905	do	do	1.0
Sept. 19, 1907	do	do	3.0
Apr. 23, 1903	do	Orange Avenue	[b] .0
May 17, 1903	do	do	[b] .0
Apr. 15, 1905	do	do	9.9
Feb. 28, 1914	do	Highway bridge on East Highlands, Santa Ana Canyon road.	59
Mar. 10, 1914	do	do	18
May 15, 1914	do	do	11
June 11, 1898	City Creek	Mouth of canyon	3.03
Sept. 9, 1898	do	do	.07
Mar. 25, 1899	do	do	8.80
Aug. 25, 1899	do	do	.17
July 12, 1900	do	do	.16
Oct. 1, 1900	do	do	.21
Apr. 7, 1902	do	do	12.5
Sept. 4, 1902	do	do	.2
Apr. 23, 1903	do	do	22
May 17, 1903	do	do	11.2
Sept. 11, 1903	do	do	.2
Sept. 22, 1904	do	do	.5
Sept. 23, 1905	do	do	1.16
Sept. 19, 1907	do	Mouth of canyon	4.6
Aug. 28, 1912	do	In City Creek canal about 1,500 feet below intake All water of creek in canal.	2.6

[a] Estimated. [b] Stream dry

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Miscellaneous discharge measurements of tributaries and canals in Santa Ana River drainage basin, for 1896–1918—Continued.

Date.	Stream.	Locality.	Discharge.
			Sec.-ft.
Apr. 23, 1913	City Creek	About 500 feet below intake of City Creek canal near Highlands. Canal dry.	6.8
Mar. 10, 1914	do	At bridges on Base Line road near Highlands	35
May 15, 1914	do	do	18
June 11, 1898	Strawberry Creek (also known as East Twin Creek).	Canyon:	
		Ditch	1.95
		Tunnel	.11
		Total	2.06
Sept. 9, 1898	do	Canyon:	
		Ditch	.43
		Tunnel	.30
		Total	.73
Mar. 24, 1899	do	Canyon:	
		Ditch	3.88
		Tunnel	.50
		Total	4.38
Aug. 25, 1899	do	Canyon:	
		Ditch	.58
		Tunnel	.16
		Total	.74
July 12, 1900	do	Canyon:	
		Ditch	.62
		Tunnel	.15
		Total	.77
Oct. 1, 1900	do	Canyon:	
		Ditch	.36
		Tunnel	.21
		Total	.57
Apr. 4, 1902	do	Canyon:	
		Creek	4.7
		Tunnel	.2
		Total	4.9
Sept. 4, 1902	do	Canyon	.4
Apr. 23, 1903	do	do	10
May 17, 1903	do	Canyon:	
		Creek	3.2
		Ditch	1.6
		Total	4.8
Sept. 11, 1903	do	Canyon:	
		Ditch	.4
		Creek	0
		Total	.4
Apr. 23, 1903	do	1 mile above Southern California Ry	0
May 17, 1903	do	do	0
Sept. 22, 1904	do	Head of pipe line	.6
Sept. 23, 1905	do	Near Arrowhead Springs	.54
July 14, 1906	do	do	2.7
Sept 17, 1907	do	do	2.3
June 11, 1898	Waterman Canyon Creek (also known as West Twin Creek).	do	
		Pipe line	1.06
		Flume	.68
		Hot Springs	.40
		Total	2.14

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Miscellaneous discharge measurements of tributaries and canals in Santa Ana River drainage basin, for 1896–1918—Continued.

Date.	Stream.	Locality.	Discharge.
			Sec.-ft.
Sept. 9, 1898	Waterman Canyon Creek (also known as West Twin Creek).	Near Arrowhead Spring	0.38
Mar. 21, 1899	do	do	3.[illegible]
Aug. 25, 1899	do	do	.20
July 12, 1900	do	do	.22
Oct. 1, 1900	do	do	.16
Apr. 4, 1902	do	do	3.20
Sept. 4, 1902	do	do	.13
Apr. 23, 1903	do	Mouth of canyon	8.6
Do	do	Southern California Ry	[a] 0
May 18, 1903	do	do	[a] 0
Do	do	Total at mouth of canyon	4.4
Sept. 11, 1903	do	do	.3
Sept. 21, 1904	do	Head of pipe line	.4
July 13, 1905	do	Near Arrowhead Springs	1.02
July 14, 1906	do	Mouth of canyon	4.0
Sept. 17, 1907	do	Near Arrowhead Springs	2.0
Oct. 13, 1905	Devil Canyon Creek	Mouth of canyon	1.26
July 14, 1906	do	do	5.20
July 24, 1896	Lytle Creek	do	15.7
June 10, 1898	do	do	10.7
Aug. 27, 1898	do	do	10.0
Aug. 29, 1899	do	do	12.5
June 8, 1900	do	do	6.2
Sept. 29, 1900	do	do	4.6
Apr. 4, 1902	do	do	19.9
Sept. 5, 1902	do	do	5.0
Apr. 1, 1903	do	do	1,790
Apr. 22, 1903	do	do	.68
Do	do	Highland Avenue	[a] 0
May 19, 1903	do	do	[a] 0
Do	do	Mouth of canyon	29.5
July 2, 1903	do	do	16.5
Sept. 12, 1903	do	do	14.7
Sept. 22, 1904	do	do	9.2
June 16, 1905	do	do	23
July 16, 1906	do	do	81.4
June 8, 1900	Cajon Creek, Lytle Creek	Keenebrook station	1.37
July 6, 1906	do	do	3.3
Oct. 11, 1910	do	Below junction with Lone Pine Creek	4.8
July 16, 1906	Cable Canyon Creek, Cajon Creek.	Near Glen Helen ranch	2.2
Aug. 26, 1912	Southern California Edison Power Co.'s canal, diverts from Lytle Creek.	1,060 feet below intake in sec. 26, T. 2 N., R. 6 W., near west line of section. Includes flow of Lytle Creek and a small flow developed from gravels by diverting dam.	17
Aug. 26, 1898	Cucamonga Creek	Headworks in canyon	1.04
July 11, 1900	do	do	1.08
Oct. 7, 1901	do	do	2.06
Apr. 3, 1902	do	do	4.69
Apr. 21, 1903	do	Mouth of canyon	15
Do	do	Southern California Ry	[a] 0
May 25, 1903	do	Mouth of canyon	5.5
Do	do	Base Line Avenue	.0
Sept. 13, 1903	do	Above headworks of Hermosa Water Co	3.6
Sept. 23, 1904	do	Point of diversion of Cucamonga Water Co	1.8
June 19, 1898	Spring Brook	Below West Riverside bridge	2.92
Aug. 28, 1898	do	do	1.27
July 28, 1900	do	do	2.77
Aug. 30, 1901	do	do	2.08
Mar. 27, 1917	Temescal Water Co.'s canal, diverts from San Jacinto River.	Above U. S. G. S. gaging station on San Jacinto River near Elsinore.	6.4
Apr. 21, 1917	do	do	9.8
May 20, 1917	do	do	5.5
May 31, 1916	Pacific Light and Power Corp.'s tailrace (Sierra plant), diverts from San Antonio Creek.	Weir in tailrace of plant near Claremont	21
June 13, 1916	do	do	21
May 31, 1916	Evey Creek, San Antonio Creek.	100 feet above concrete dam, at trail crossing near Claremont.	1.8
June 27, 1916	do	do	1.1
July 3, 1916	do	do	1.0
July 19, 1916	do	do	.5
Feb. 19, 1917	do	do	.8
Apr. 5, 1917	do	do	.7
Apr. 26, 1917	do	do	.7

[a] Stream dry

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Miscellaneous discharge measurements of tributaries and canals in Santa Ana River drainage basin, for 1896–1918—Continued.

Date.	Stream.	Locality.	Discharge.
			Sec.-ft.
Jan. 12, 1917	Brea Canyon Creek	Just below junction with Canada del Rodes	1.0
Jan. 27, 1917	do	do	1.3
Feb. 25, 1917	do	do	23
Apr. 7, 1917	do	do	a.3
Jan. 12, 1917	Canada del Rodos, Brea Canyon Creek.	Just above Birch Oil Co.'s dam in NW. ¼ NW. ¼, sec. 22, T. 2 S., R. 9 W.	.16
Apr. 7, 1917	do	do	.08
Jan. 12, 1917	do	do	.08
Feb. 25, 1917	do	do	4.6
Mar. 23, 1917	do	do	.09
Jan. 12, 1917	do	Just above junction with Brea Canyon Creek	.3
Jan. 26, 1917	do	do	.2
Feb. 25, 1917	do	do	7.5
Apr. 7, 1917	do	do	a.05
Mar. 23, 1917	Birch Oil Co.'s diversion, diverts from Canada del Rodes.	Storage tank at Brea oil fields, 3 miles below intake	.05

a Estimated.

Discharge measurements of canals between the Riverside Narrows and the Auburndale bridge having their source in Santa Ana River, Calif., for 1903–1907.

[By K. Sanborn, engineer Riverside Water Co.]

Date.	Canal.	Discharge.	Date.	Canal.	Discharge.
		Sec.-feet.			*Sec.-feet.*
Sept. 5, 1903	Castle ditch	3	Sept. 5, 1903	Newton ditch, near intake	4.10
May 15, 1904	do	.0	May 15, 1904	do	4.70
Aug. 18, 1904	do	.0	Aug. 20, 1904	do	7.70
June 15, 1905	do	.0	June 15, 1905	do	2.30
Sept. 22, 1905	do	.0	Sept. 22, 1905	do	1.70
June 21, 1906	do	.0	June 21, 1906	do	.00
Sept. 29, 1906	do	.0	Sept. 29, 1906	do	.00
June 26, 1907	do	.0	June 26, 1907	do	.00
Sept. 27, 1907	do	.0	Sept. 27, 1907	do	.00
May 15, 1904	Durkee ditch at Auburndale Bridge	.0	Sept. 5, 1903	Roberts ditch near intake	2.00
Aug. 20, 1904	do	.0	May 15, 1904	do	2.20
June 15, 1905	do	4.1	Aug. 20, 1904	do	1.40
Sept. 22, 1905	do	.0	June 15, 1905	do	1.00
June 21, 1906	do	3.2	Sept. 22, 1905	do	1.70
Sept. 29, 1906	do	3.5	June 21, 1906	do	2.60
June 26, 1907	do	3.4	Sept. 29, 1906	do	1.50
Sept. 27, 1907	do	9.8	June 26, 1907	do	.80
Sept. 5, 1903	Fuller ditch	13.4	Sept. 27, 1907	do	.00
May 15, 1904	do	11.2	June 15, 1905	Santa Ana River at Auburndale Bridge	63.00
Aug. 20, 1904	do	4.6	Sept. 22, 1905	do	57.60
June 15, 1905	do	5.6	June 21, 1906	do	56.00
Sept. 22, 1905	do	5.4	Sept. 29, 1906	do	52.00
June 21, 1906	do	12.7	June 26, 1906	do	78.00
Sept. 29, 1906	do	6.7	Sept. 27, 1906	do	57.70
June 26, 1907	do	8.3	June 15, 1905	Santa Ana River at Auburndale Bridge, including canals	71.13
Sept. 27, 1907	do	1.7			
May 15, 1904	Gilliland ditch at Auburndale Bridge	.61	Sept. 22, 1905	do	57.80
Aug. 20, 1904	do	.42	June 21, 1906	do	59.37
June 15, 1905	do	1.40	Sept. 29, 1906	do	57.60
Sept. 22, 1905	do	.30	June 26, 1907	do	86.00
June 21, 1906	do	.17	Sept. 27, 1907	do	66.50
Sept. 29, 1906	do	.50	Sept. 5, 1903	Wilbur ditch at Roger's pipe trestle crossing	1.70
June 26, 1907	do	1.10			
Sept. 27, 1907	do	.60	May 15, 1904	do	2.54
May 15, 1904	Newberry ditch at Auburndale Bridge	.94	Aug. 20, 1904	do	2.13
Aug. 20, 1904	do	2.70	June 15, 1905	do	6.10
June 15, 1905	do	.00	Sept. 22, 1905	do	6.48
Sept. 22, 1905	do	.00	June 21, 1906	do	.00
June 21, 1906	do	.00	Sept. 29, 1906	do	.00
Sept. 29, 1906	do	1.60	June 26, 1907	do	.00
June 26, 1907	do	.00	Sept. 27, 1907	do	.00
Sept. 27, 1907	do	.80			

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Miscellaneous measurements of canals in Santa Ana River drainage basin, Calif., for 1898–1903.

Date.	Stream.	Made by—	Locality.	Discharge.
				Sec.-feet.
Oct. 25, 1900	Alvitrez ditch	K. Sanborn	Vicinity of Colton and Riverside.	1.53
Apr. 29, 1903	Anaheim and Fullerton canal.	O. W. Peterson	Heading	2.8
Sept. 25, 1903	do	W. B. Clapp	Esperanza	32
June 22, 1898	Anaheim and Santa Ana canal.	F. H. Olmsted	Division box	67.5
Aug. 30, 1898	do	do	do	52.9
Aug. 30, 1899	do	S. G. Bennett	do	59.6
Sept. 15, 1899	do	J. B. Lippincott	do	71.7
Oct. 25, 1899	do	do	do	145
July 28, 1900	do	S. G. Bennett	do	49.7
Oct. 5, 1900	do	W. W. Cockins, jr.	do	75.4
Aug. 27, 1901	do	J. B. Lippincott	do	64.5
Aug. 31, 1901	do	do	do	55.4
Sept. 7, 1898	Bear Valley ditch	do	Joint headworks with Palm Spring.	9.35
Aug. 25, 1899	do	S. G. Bennett	do	6.34
Feb. 17, 1898	do	J. B. Lippincott	¼ mile northeast of ranch house.	3.05
Sept. 28, 1899	do	do	Headgate	5.20
Sept. 29, 1899	do	do	1 mile below headgate	2.49
Aug. 30, 1901	Castillo ditch	do	Below Riverside Narrows	1.19
Sept. 3, 1899	Durkee ditch	do	Near ranch house	1.38
Sept. 13, 1899	do	do	Newberry east line	6.14
July 28, 1900	do	S. G. Bennett	Ranch house	1.80
Aug. 27, 1901	do	J. B. Lippincott		3.98
Aug. 31, 1901	do	do		8.24
Sept. 23, 1903	do	W. B. Clapp	Auburndale Bridge	3.40
July 1, 1899	Evans ditch		Near Temescal, Riverside County.	3.75
Aug. —, 1899	do		do	3.00
June 19, 1898	Evans lower ditch	F. H. Olmsted	Riverside County	5.68
Aug. 28, 1898	do	do	do	4.87
Aug. 30, 1899	do	S. G. Bennett	do	4.48
July 27, 1900	do	do	do	5.27
Oct. 25, 1900	do	K. Sanborn	do	4.36
July 27, 1900	Evans upper ditch	S. G. Bennett	do	1.04
Oct. 25, 1900	do	K. Sanborn	do	3.32
Aug. 30, 1901	do	J. B. Lippincott	do	1.88
Oct. 5, 1900	Fuller ditch	W. W. Cockins, jr.		6.50
Aug. 30, 1901	do	J. B. Lippincott	Near intake	9.69
Do	do	do	Fuller's ranch house	7.15
July 28, 1900	Gilliland's ditch	S. G. Bennett	Auburndale Bridge	1.4
Sept. 23, 1903	do	W. B. Clapp	do	1.2
June 20, 1898	"H" ditch	F. H. Olmsted	On right bank of Santa Ana River 3 miles below Riverside Narrows.	3.75
Do	"J" ditch	do	On right bank of Santa Ana River 5 miles below Riverside Narrows.	9.99
June 18, 1898	Jurupa canal	do		13.8
July 1, 1898	do	Lippincott and Sanborn.		7.11
Aug. 27, 1898	do	F. H. Olmsted		10.2
Sept. 22, 1898	do	J. B. Lippincott		5.41
May 31, 1898	do	S. G. Bennett		6.74
July 15, 1898	do	do		13.1
July 26, 1899	do	do	Submerged flume above Colton Bridge.	5.11
Aug. 24, 1899	do	do	do	4.28
July 27, 1900	do	do		14.4
Oct. 19, 1900	do	K. Sanborn		14.0
July 28, 1900	Newberry ditch	S. G. Bennett	Auburndale Bridge	5.47
Aug. 27, 1901	do	J. B. Lippincott	Head	3.05
Aug. 31, 1901	do	do	do	3.23
Sept. 23, 1903	do	W. B. Clapp	Auburndale Bridge	3.3
Aug. 30, 1901	do	J. B. Lippincott	Below Narrows	7.04
June 17, 1898	Riverside Water Co.'s lower canal.	F. H. Olmsted		9.27
June 18, 1898	do	do		11.3
Aug. 30, 1901	do	J. B. Lippincott		4.52
Sept. 30, 1902	do	K. Sanborn		3.07
Aug. 30, 1899	Riverside Water Co.'s upper canal.	S. G. Bennett		57.4
July 26, 1900	do	do		43.3
Aug. 27, 1901	Roberts ditch	J. B. Lippincott		.0
Aug. 31, 1901	do	do		.0

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Miscellaneous measurements of canals in Santa Ana River drainage basin, Calif., for 1898–1903—Continued.

Date.	Stream.	Made by—	Locality.	Discharge.
				Sec.-ft.
June 19, 1898	Roubidoux ditch	F. H. Olmsted		8.94
Aug. 28, 1898	do	do		8.50
July 27, 1900	do	S. G. Bennett		8.18
Oct. 25, 1900	do	K. Sanborn		7.80
Aug. 30, 1901	do	J. B. Lippincott		8.75
July 14, 1900	San Timoteo ditch	K. Sanborn	Bicknell station	1.50
June 22, 1898	Santa Ana Irrigation Co.'s canal.	F. H. Olmsted	Near bridge at Yorba	29.0
Aug. 30, 1898	do	do	do	24.6
May 26, 1899	do	F. Rolfe	3 miles above Olive	44.0
Sept. 15, 1899	do	J. B. Lippincott		30.3
Oct. 26, 1899	do	do		47.2
Sept. 3, 1900	do	W. P. Searcy		39.0
Aug. 15, 1900	do	do		25.7
Aug. 31, 1901	do	J. B. Lippincott	Road crossing	18.3
Apr. 30, 1903	do	O. W. Peterson	1 mile below heading	43
Sept. 23, 1903	do	W. B. Clapp	do	34
June 24, 1901	Seecher ditch	W. P. Searcy	Rincon Bridge	.62
June 20, 1898	Townsend ditch	F. H. Olmsted		4.80
Oct. 5, 1900	do	W. W. Cockins, jr		5.84
July 27, 1900	Trujillo ditch	S. G. Bennett		.46
Oct. 25, 1900	do	K. Sanborn		.53
Aug. 30, 1901	Wilbur ditch	J. B. Lippincott		4.52
Oct. 26, 1899	Yorba ditch	do		8.88
Aug. 15, 1900	do	W. P. Searcy		14.0
Sept. 3, 1900	do	do		21.4
Aug. 31, 1901	do	J. B. Lippincott		.40
Sept. 25, 1903	do	W. B. Clapp	Esperanza	.6

Miscellaneous low-water measurements made in basin of Santa Ana River, Los Angeles, San Bernardino, Riverside, and Orange counties, for 1900.

Date.	Locality.	Discharge.
1900.		*Sec.-feet.*
Sept. 25	Frey's ranch, near Spadra	1.85
25	Phillip's ranch, near Spadra (weir)	.74
27	C. L. Lancaster, Mesa Avenue, Lordsburg (weir)	.559
26	Covina Irrigation Co. compressor pumping plant, south of Lordsburg	3.58
24	Neuruff place, corner Holt Avenue and San Antonio Avenue, Pomona (weir)	.33
26	Pomona Land & Water Co., Garey Avenue (weir)	1.28
26	Consolidated Water Co.'s Pomona air-compressor plant (weir)	3.34
24	Consolidated Water Co., north of Pomona College (weir)	.82
25	James Warden's place (weir)	.25
24	Brundege place, San Antonio Avenue, Pomona	.26
25	Del Monte Water Co. (weir)	.06
25	San Antonio Water Co.'s wells in Claremont; water goes to Ontario (weir)	.40
25	San Antonio Water Co.'s wells at Indian Hill, ½ mile north of Pomona College (weir)	.99
25	San Antonio Canyon. From records of Pomona Land & Water Co. The discharge from San Antonio Canyon was 7.53 second-feet Sept. 2, 1895, and 9.02 second-feet on Sept. 6, 1897 (weir) [a]	3.72
	RED HILL, CUCAMONGA.	
July 11	Cucamonga Land & Water Co., Cucamonga Creek, 30-inch pipe line (weir)	1.15
11	Cucamonga Land & Water Co., Lone Star Spring pumping plant (weir)	1.20
11	Cucamonga Land & Water Co., "Y" tunnel (weir)	1.68
11	Stowell water from 90-acre tract; west side part to Ontario (weir)	2.97
11	San Antonio Water Co., Haskoll well (weir)	2.13
11	San Antonio Water Co., Sixteenth Street, pumping plant (weir)	1.72
		10.85

[a] July 11, 1900, measurement made of water in San Antonio Canyon by S. G. Bennett; discharge, 4.07 second-feet.

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Measurements of cienagas and developments, in miner's inches, at Red Hill, Calif., for 1885–1900.

[Forty miner's inches equivalent to one second-foot.]

Date.	Made by—	East side.								West side.										
		Creek Div. box, 30-inch line.	Div. box 1, 16-inch line and V tunnel, built in 1886–1887.	China cienaga.	Lone Star Spring tunnel.	Y tunnel, built prior to 1896.	Cienaga below No. 1.	Total without Lone Star.	Total.	Spring northwest of tunnel No. 2 portal.	W. cienaga, "D."	Picnic Spring, cienaga C.	Artesian wells Nos. 1 and 2.	Tiburcio Spring.	Tunnel No. 2 on 90 acre.	China garden.	Stowell wells and tunnel above 90-acre tract.	Rain previous season.	Total on 90-acre tract.	Grand total, Red Hill.
Sept. 26, 1885	Wm. M. Fitzhugh	225.36	.....	51.73	(2.02)	6.61 9.61 16.22	.....	293.31	295.33	56.47	43.27	(9.00)	.....	(1.00)	.....	.....	.....	10.81	111.74	406.07
Nov. 30, 1886	J. P. Culver	261.43	64.67	11.46	2.02	.....	.....	337.56	339.57	9.50	5.70 97.80 .90 104.40	18.40	.....	2.16	.....	(a)	.....	21.83	184.40	474.03
July 24, 1887	F. Eaton	147.50	169.50	(10.00)	(2.00)	163.00	.....	327.00	329.00	13.67	31.90	10.00	(b)	(1.00)	.....	(16.76)	.....	14.50	73.33	402.33
July 13, 1888	J. P. Culver	155.78	183.61	18.10	c13.59	138.62	46.43	357.49	371.08	3.14	38.89	5.38	15.14	1.59	d17.70	16.76	.....	17.76	98.60	469.68
July 13, 1889	E. T. Wright	184.88	163.57	18.27	9.78	136.23	48.36	361.42	371.20	3.94	40.53	17.33	15.14	1.81	54.02	(16.76)	.....	20.97	149.53	520.73
July 14, 1890	.....do	260.03	228.53	17.32	10.85	156.01	72.52	505.88	516.73	3.08	71.98	30.53	13.98	.92	e73.82	(16.76)	.....	25.45	211.07	727.80
Do	J. P. Culver	266.82	238.04	18.50	11.25	165.55	72.49	522.36	534.61	3.14	81.78	31.47	14.29	2.38	75.42	(16.76)	.....	.....	225.24	759.85
June 29, 1893	E. T. Wright	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13.29	.....	.....	.....	.....	.....	19.82	.....	.....
July 14, 1893	.....do	.....	.....	.....	.....	152.42	.....	.....	.....	.....	.....	.....	.....	.....	36.45	.....	.....	.....	.....	.....
Sept. 15, 1894	.....do	f160.31	182.84	13.14	(8.00)	141.40	41.74	356.29	364.29	.....	.....	.....	.....	.....	.....	.....	.....	8.13	.....	.....
June 12, 1895	.....do	198.53	154.87	21.00	(7.00)	(110.60)	(44.27)	374.40	381.40	.....	.....	.....	.....	.....	.....	.....	.....	20.98	.....	.....
June 14, 1896	N. W. Stowell	.....	.....	.....	.....	.....	.....	.....	.....	.00	22.00	1.00	28.00	.....	g18.00	.....	.00	.....	64.00	352.55
Aug. 20, 1896	F. E. Trask	132.40	137.90	11.25	(7.00)	.....	.....	281.55	288.55	.....	.....	.....	.....	.....	.....	.....	.....	8.11	.....	.....
Mar. 2, 1897	N. W. Stowell	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46.00	.....	.....	.....
Aug. 5, 1897	.....do	.....	.....	.....	9.42	.....	.....	.....	.....	.00	20.00 7.00 27.00	(.50)	h20.25	.00	41.40	.00	.....	.....	89.15	334.07
Aug. 10, 1897	F. E. Trask	104.90	120.10	10.50	i(9.42)	.....	.....	235.50	244.92	.00	.....	.....	.....	.....	.....	.....	.....	16.74	.....	.....
Aug. 13, 1898	.....do	76.68	95.91	7.84	j47.00	.....	.....	180.43	227.43	.00	.....	.....	.....	.....	.....	.....	.....	8.24	.....	.....
Aug. 14, 1898	N. W. Stowell	.....	.....	.....	.....	.....	.....	.....	.....	.00	k24.00	(.50)	l13.00	.00	26.00	.00	.....	.....	63.50	290.93
Apr. 1, 1899	.....do	107.25	98.20	.....	.....	.....	.....	205.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.49	.....	.....
Aug. 21, 1899	E. T. Wright	m91.58	80.95	.....	n27.00 o75.00	56.17	24.78	172.53	p199.53 p247.53	.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

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Aug. 25, 1899	E. T. Wright and F. C. Finkle	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.13	.....	2.68	.....	61.80	.....	92.40	.....	67.61	267.14
Apr. 1, 1899	Newman and Finkle	107.25	98.20	(5.00)	q35.60	72.60	.....	210.45	246.05	0.00	q15.40	.....	7.90	.....	.....	.....	.....	.....	.....	.....
Feb. 3 and 5, 1900.	Newman, Trask, and Finkle	m97.06	77.22	.....	17.06	54.88	.....	174.28	191.34	.00	3.91	.....	1.45	.....	.....	.....	.....	.....	.....	.....
Feb. 11, 1900	Trask and Finkle	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.81	0.56	1.20	.....	55.00	.....	76.25	.....	61.47	252.81

a China garden included in "D."
b Fall, 1897.
c Tunnel.
d Construction begun January, 1888.
e Length, 2,600 feet.
f 1 p. m.
g Caved in.
h Aug. 4, well No. 2 cut.
i Exterior of tunnel begun, 11.
j Stowell.
k June 12, not pumped.
l July 24, not pumped.
m And China cienaga.
n Flow.
o Pumped.
p When Lone Star tunnel was pumped.
q Mar. 15.

NOTE.—By the law of Mar. 23, 1901, 40 California miner's inches equal 1 second-foot.

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Discharge measurements of Redlands or Bolen tunnel for 1896–1905.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
		Sec.-feet.			*Sec.-feet.*
1896.			1901.		
Nov. 21	J. B. Lippincott	1.00	July 6	S. G. Bennett	1.40
			Dec. 5	do	.90
1898.					
June 12	J. B. Lippincott	1.24	1902.		
Sept. 8	do	1.24	July 10	S. G. Bennett	.90
1899.			1903.		
June 15	S. G. Bennett	.67	Aug. 31	W. B. Clapp	1.8
July 15	do	1.03			
Aug. 24	do	1.10	1904.		
			May 28	W. B. Clapp	1.59
1900.			June 29	do	1.55
Apr. 14	S. G. Bennett	.88	Sept. 21	do	1.04
July 13	do	.84			
Oct. 2	W. W. Cockins, jr	.85	1905.		
			Sept. 22		1.10

WATER ABSORBED IN SAND AND GRAVEL.

During the winter of 1902–3 the precipitation in southern California was greater than at any time during the preceding 10 years. This condition led to heavy irrigation during the spring of 1903, many irrigators taking advantage of it to thoroughly saturate the soil at a time when water was plenty and cheap, thereby saving much expense and contention, which always accompanies a later irrigation when water is scarce and expensive and the demand is greater than the supply.

Immediately after the rain of April 16, 1903, a series of measurements were made by W. B. Clapp under the direction of the United States Geological Survey to determine the quantity of water being absorbed in the sand and gravel washes of the larger tributary streams of the three principal river basins of southern California—Santa Ana, San Gabriel, and Los Angeles rivers. Measurements were taken at the mouths of the canyons where the streams leave the mountains, at all canal diversions, and at such intervals along the streams as time and the available force detailed for this work would allow, the location of the point where the stream entirely disappeared or left the valley being noted. These measurements show the quantity of water taken up in the sand and gravel wash of this stream on the days given, and the following tables give this quantity in second-feet and acre-feet for a period of 24 hours:

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Water discharged from tributary streams and sinking in the Santa Ana River basin above Colton, Calif.

Stream.	Second-feet.			Acre-feet.		
	Diversion.	Waste.	Total.	Diversion.	Waste.	Total.
APR. 24, 1903.						
Santa Ana	16	116	132	32	230	262
Mill Creek	5	34	39	10	67	77
Plunge Creek	.....	23	23	.....	46	46
City Creek	.....	22	22	.....	44	44
East Twin Creek	.....	10	10	.....	20	20
West Twin Creek	.....	8.6	8.6	.....	17	17
Lytle Creek	7	56	63	14	111	125
	28	270	298	56	535	591
MAY 16, 1903.						
Santa Ana	47	48	95	93	95	188
Mill Creek	49	19	68	97	38	135
Plunge Creek	6	3	9	12	6	18
City Creek	7	4	11	14	8	22
East Twin Creek	2	3	5	4	6	10
West Twin Creek	2	2	4	4	4	8
Lytle Creek	15	14	29	30	28	58
	128	93	221	254	185	439

RETURN WATERS IN SAN BERNARDINO COUNTY.

Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif, for 1898–1907.

[By K. Sanborn, engineer Riverside Water Co.]

Date.	Location.	Developed.	Natural.	Total.
Sept. 4, 1903	Barnhill pumping plant	0.80	.....	0.80
May 12, 1904	.....do	.85	.....	.85
Aug. 15, 1904	.....do	.77	.....	.77
June 9, 1905	.....do	1.10	.....	1.10
Sept. 27, 1905	.....do	.80	.....	.80
June 23, 1906	.....do	1.30	.....	1.30
Aug. 27, 1906	.....do	1.50	.....	1.50
June 25, 1907	.....do	1.70	.....	1.70
Sept. 18, 1907	.....do	1.30	.....	1.30
June —, 1898	Beam ditch	.....	0.67	.67
Sept. —, 1898	.....do	.....	.65	.65
Mar. —, 1899	.....do	.....	.72	.72
June —, 1899	.....do	.....	.52	.52
Aug. —, 1899	.....do	.....	.40	.40
Mar. —, 1900	.....do	.....	.68	.68
June —, 1900	.....do	.....	.50	.50
Sept. —, 1900	.....do	.....	.33	.33
Oct. 13, 1902	.....do	.....	.22	.22
Aug. 17, 1903	.....do	.....	.08	.08
June 4, 1904	.....do	.....	.02	.02
Aug. 20, 1904	.....do	.....	.00	.00
June 10, 1905	.....do	.....	.00	.00
Sept. 2, 1905	.....do	.....	.00	.00
June 18, 1906	.....do	.....	.00	.00
Aug. 23, 1906	.....do	.....	.00	.00
June 21, 1907	.....do	.....	.00	.00
Sept. 28, 1907	.....do	.....	.00	.00
June —, 1898	Bloomington pumping plant	5.20	.....	5.26
Sept. —, 1898	.....do	5.49	.....	5.49
Mar. —, 1899	.....do	.00	.....	.00
June —, 1899	.....do	5.93	.....	5.93
Aug. —, 1899	.....do	3.05	.....	3.05
Mar. —, 1900	.....do	3.80	.....	3.80
June —, 1900	.....do	3.68	.....	3.68
Sept. —, 1900	.....do	3.28	.....	3.28
Oct. 7, 1902	.....do	2.28	.....	2.28
Sept. 4, 1903	.....do	8.82	.....	8.82
May 12, 1904	.....do	.00	.....	.00
Aug. 17, 1904	.....do	5.61	.....	5.61

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
June 16, 1905	Bloomington pumping plant	6.62		6.62
Sept. 27, 1905	do	7.20		7.20
June 20, 1906	do	10.50		10.50
Sept. 20, 1906	do	6.70		6.70
June 21, 1907	do	5.60		5.50
Sept. 26, 1907	do	6.50		6.50
Sept. 9, 1903	Brown tract, artesian well	.11		.11
June —, 1898	Camp Carlton ditch	.61		.61
Sept. —, 1898	do	1.20		1.20
Mar. —, 1899	do	2.13		2.13
June —, 1899	do	1.63		1.63
Aug. —, 1899	do	1.02		1.02
Mar. —, 1900	do	2.55		2.55
June —, 1900	do	2.60		2.60
Sept. —, 1900	do	1.67		1.67
Oct. 7, 1902	do	1.70		1.70
Aug. 22, 1903	do	2.20		2.20
June 4, 1904	do	2.50		2.50
Aug. 19, 1904	do	2.60		2.60
May 31, 1905	do	2.60		2.60
Aug. 14, 1905	do	1.20		1.20
June 20, 1906	do	2.70		2.70
Sept. 7, 1906	do	1.94		1.94
June 20, 1907	do		4.40	4.40
Sept. 25, 1907	do	3.10		3.10
Aug. 12, 1904	Carr pumping plant	.72		.72
June 10, 1905	do	.72		.72
Aug. 14, 1905	do	.60		.60
June 19, 1906	do	.40		.40
Aug. 24, 1906	do	.70		.70
June 22, 1907	do	.00		.00
Sept. 20, 1907	do	.60		.00
Sept. 20, 1906	Citizens Water Co. pumping plant	1.50		1.50
June 25, 1907	do	4.00		4.00
Sept. 26, 1907	do	2.00		2.00
May 31, 1904	City of San Bernardino	.82	1.87	2.69
Aug. 17, 1904	do	1.02	1.79	2.81
June 19, 1905	City of San Bernardino, Lytle Creek		2.04	2.04
Sept. 27, 1905	do		1.90	1.90
June 20, 1906	do		1.90	1.90
Sept. 20, 1906	do		2.00	2.00
June 10, 1905	City of San Bernardino, Sixth Street pumping plant	1.99		1.99
Sept. 27, 1905	do	4.80		4.80
June 29, 1906	do	2.00		2.00
Oct. 23, 1906	do	4.80		4.80
June 20, 1907	do	4.00		4.00
Sept. 28, 1907	do	2.30		2.30
June —, 1898	City of Colton pumping plant (total)	6.82		6.82
Sept. —, 1898	do	7.40		7.40
Mar. —, 1899	do	3.20		3.20
June —, 1899	do	5.49		5.49
Aug. —, 1899	do	3.89		3.89
Mar. —, 1900	do	4.94		4.94
June —, 1900	do	3.21		3.21
Sept. —, 1900	do	3.54		3.54
Oct. 7, 1902	do	3.53		3.53
Sept. 4, 1903	do	3.17		3.17
May 12, 1904	do	3.00		3.00
Aug. 19, 1904	do	2.06		2.06
June 9, 1905	do	3.81		3.81
Sept. 27, 1905	do	2.70		2.70
June 19, 1906	do	2.40		2.40
Aug. 27, 1906	do	3.50		3.50
June 25, 1907	City of Colton pumping plant (total)	4.50		4.50
Sept. 18, 1907	do	4.50		4.50
June —, 1898	City of Colton (water used for irrigating)	1.97		1.97
Sept. —, 1898	do	1.61		1.61
Mar. —, 1899	do	1.69		1.69
June —, 1899	do	1.30		1.30
Aug. —, 1899	do	1.30		1.30
Mar. —, 1900	do	1.69		1.69
June —, 1900	do	1.54		1.54
Sept. —, 1900	do	1.53		1.53
Oct. 7, 1902	do	1.08		1.08
Sept. 27, 1905	do	1.20		1.20
June 19, 1906	do	.70		.70
Aug. 27, 1906	do	1.60		1.60
June 25, 1907	do	1.20		1.20
Sept. 18, 1907	do	.00		.00
Sept. 7, 1903	Cooley tract, artesian well	2.70		2.70

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
June —, 1898	Daley ditch		0.63	0.63
Sept. —, 1898	do		.67	.67
Mar. —, 1899	do		.71	.71
June —, 1899	do		.51	.51
Aug. —, 1899	do		.51	.51
Mar. —, 1900	do		.72	.72
June —, 1900	do		1.12	1.12
Sept. —, 1900	do		.54	.54
Oct. 13, 1902	do		.00	.00
Sept. 9, 1903	do		.00	.00
June 4, 1904	do		.00	.00
Aug. 20, 1904	do		.00	.00
June 10, 1905	do		.00	.00
Sept. 4, 1905	do		.00	.00
June 25, 1906	do		.00	.00
Oct. 24, 1906	do		.00	.00
June 20, 1907	do		.00	.00
Sept. 25, 1907	do	9.00		.00
May 30, 1905	Excelsior Land & Water Co.	.65		.65
Sept. 28, 1905	do	.40		.40
June 27, 1906	do	.00		.00
Aug. 24, 1906	do	.75		.75
June 19, 1907	do	.65		.65
Sept. 18, 1907	do	.65		.65
June —, 1898	Gage canal intake, Santa Ana River		1.16	1.16
Sept. —, 1898	do		1.16	1.16
Mar. —, 1899	do		.72	.72
June —, 1899	do		.24	.24
Aug. —, 1899	do		.64	.64
Mar. —, 1900	do		.395	.395
June —, 1900	do		.29	.29
Sept. —, 1900	do		.17	.17
Oct. 7, 1902	do		.00	.00
Aug. 21, 1903	do		.00	.00
May 31, 1904	do		.00	.00
Aug. 15, 1904	do		.00	.00
May 26, 1905	do		.00	.00
Sept. 4, 1905	do		.00	.00
June 19, 1906	do		8.30	.00
Sept. 7, 1906	do		.00	.00
June 20, 1907	do		.00	.00
Sept. 20, 1907	do		.40	.40
June —, 1898	Gage canal, Palm Avenue weir	26.26		26.26
Sept. —, 1898	do	25.07		25.07
Mar. —, 1899	do	26.68		26.68
June —, 1899	do	25.22		25.22
Aug. —, 1899	do	23.47		23.47
Mar. —, 1900	do	21.96		21.96
June —, 1900	do	22.23		22.23
Sept. —, 1900	do	27.85		27.85
Oct. 11, 1902	do	30.17		30.17
Aug. 21, 1903	do	30.82		30.82
May 31, 1904	do	27.80		27.80
Aug. 19, 1904	do	31.96		31.96
May 31, 1905	do	28.83		28.83
Sept. 2, 1905	do	32.70		32.70
June 20, 1906	do	22.90	8.30	31.20
Sept. 7, 1906	do	38.00		38.00
June 20, 1907	do		50.10	50.10
Sept. 20, 1907	do	33.20	.40	33.60
Sept. 9, 1903	Garner tract, artesian well	.77		.77
May 12, 1904	Grand Terrace pumping plant	.34		.34
Aug. 17, 1904	do	.34		.34
May 31, 1905	do	.54		.54
Aug. 14, 1905	do	.00		.00
June 9, 1906	do	.30		.30
Sept. 7, 1906	do	.35		.35
June 20, 1907	do	.70		.70
Sept. 20, 1907	do	.00		.00
June —, 1898	Haws & Talmadge ditch		.84	.84
Sept. —, 1898	do		.00	.00
Mar. —, 1899	do		.28	.28
June —, 1899	do		.00	.00
Aug. —, 1899	do		.00	.00
Mar. —, 1900	do		.00	.00
June —, 1900	do		.00	.00
Sept. —, 1900	do		.00	.00
Sept. 30, 1902	do		.00	.00
Aug. 17, 1903	do		.00	.00
May 13, 1904	do		.00	.00

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
Aug. 15, 1904	Haws & Talmadge ditch		0.00	0.00
June 2, 1905	do		.00	.00
Sept. 5, 1905	do		.00	.00
June 14, 1906	do		.05	.05
Aug. 23, 1906	do		.08	.08
June 21, 1907	do		.08	.00
Sept. 28, 1907	do	0.00		.00
Sept. 4, 1903	Hunter pumping plant	1.79		1.79
June 2, 1904	do	1.82		1.82
Aug. 17, 1904	do	1.54		1.54
June 6, 1905	do	1.09		1.09
Sept. 4, 1905	do	1.60		1.60
June 19, 1906	do	1.90		1.90
Aug. 27, 1906	do	1.50		1.50
June 25, 1907	do	1.50		1.50
Sept. 18, 1907	do	1.50		1.50
Sept. 9, 1903	Hurd tract, artesian well	.21		.21
Sept. 4, 1903	Johnson & Hubbard pumping plant	.42		.42
June 2, 1904	do	.67		.67
Aug. 17, 1904	do	.39		.39
June 9, 1905	do	.59		.59
Sept. 4, 1905	do	.30		.30
June 23, 1906	do	.52		.52
Aug. 27, 1906	do	.48		.48
June 25, 1907	do	.40		.40
Sept. 18, 1907	do	.00		.00
Sept. 4, 1903	Lamb pumping plant	.24		.24
May 12, 1904	do	.25		.25
Aug. 15, 1904	do	.25		.25
June 9, 1905	do	.30		.30
Sept. 27, 1905	do	.00		.00
June 23, 1906	do	.00		.00
Aug. 27, 1906	do	.00		.00
June 25, 1907	do	.00		.00
Sept. 18, 1907	do	.00		.00
Sept. 4, 1903	Lawson Well Co., pumping plant	.59		.59
June 12, 1904	do	.65		.65
Aug. 15, 1904	do	.50		.50
June 9, 1905	do	.62		.62
Sept. 27, 1905	do	.60		.60
June 23, 1906	do	.60		.60
Aug. 27, 1906	do	.70		.70
June 25, 1907	do	.90		.90
Sept. 18, 1907	do	.90		.90
June —, 1898	Logsdon & Farrell ditch		.72	.72
Sept. —, 1898	do		.63	.63
Mar. —, 1899	do		1.61	1.61
June —, 1899	do		1.15	1.15
Aug. —, 1899	do		.54	.54
Mar. —, 1900	do		1.26	1.26
June —, 1900	do		.49	.49
Sept. —, 1900	do		.20	.20
Oct. 13, 1902	do		.00	.00
Aug. 22, 1903	do		.00	.00
June 4, 1904	do		.00	.00
Aug. 3, 1904	do		.00	.00
June 10, 1905	do		.00	.00
Sept. 2, 1905	do		.00	.00
June 18, 1906	do		.00	.00
Oct. 24, 1906	do		.00	.00
June 20, 1907	do		.00	.00
Sept. 25, 1907	do		.00	.00
Aug. 17, 1904	Lytle Creek Water & Improvement Co. pumping plant	4.00		4.00
June 10, 1905	do	.00		.00
Sept. 27, 1905	do	.00		.00
June 20, 1906	do	.00		.00
Sept. 20, 1906	do	.00		.00
June 22, 1907	do	.00		.00
Sept. 20, 1907	do	.00		.00
June —, 1898	McIntyre ditch		.37	.37
Sept. —, 1898	do		.038	.038
Mar. —, 1899	do		.82	.82
June —, 1899	do		.15	.15
Aug. —, 1899	do		.00	.00
Mar. —, 1900	do		.14	.14
June —, 1900	do		.01	.01
Sept. —, 1900	do		.00	.00
Oct. 7, 1902	do		.00	.00
Sept. 9, 1903	do		.00	.00
Aug. 15, 1904	do		.00	.00

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
June 16, 1905	McIntyre ditch		0.00	0.00
Sept. 28, 1905	do		.00	.00
June 22, 1906	do		.00	.00
Sept. 20, 1906	do		.00	.00
June 25, 1907	do		.00	.00
Sept. 18, 1907	do		.00	.00
June —, 1898	McKenzie ditch		2.54	2.54
Sept. —, 1898	do		2.08	2.08
Mar. —, 1899	do		9.40	9.40
June —, 1899	do		3.86	3.86
Aug. —, 1899	do		2.00	2.00
Mar. —, 1900	do		2.30	2.30
June —, 1900	do		1.57	1.57
Sept. —, 1900	do		1.69	1.69
Sept. 30, 1902	do		.00	.00
Aug. 17, 1903	do		.00	.00
May 13, 1904	do	0.67		.67
Aug. 12, 1904	do	.58		.58
June 2, 1905	do		.00	.00
Sept. 5, 1905	do		.00	.00
June 18, 1906	do		.00	.00
Aug. 23, 1906	do		.00	.00
June 21, 1907	do		.00	.00
Sept. 28, 1907	do		.00	.00
June —, 1898	Meeks & Daley ditch		8.42	8.42
Sept. —, 1898	do		17.00	17.00
Mar. —, 1899	do		17.00	17.00
June —, 1899	do		15.48	15.48
Aug. —, 1899	do		10.45	10.45
Mar. —, 1900	do		13.94	13.94
June —, 1900	do		13.78	13.78
Sept. —, 1900	do		14.68	14.68
Sept. 30, 1902	do		13.40	13.40
Sept. 1, 1903	do		12.87	12.87
May 31, 1904	do		16.30	16.30
Aug. 3, 1904	do		16.75	16.75
June 9, 1905	do		15.70	15.70
Sept. 2, 1905	do		15.50	15.50
June 28, 1906	do		16.90	16.90
Aug. 31, 1906	do		17.10	17.10
June 19, 1907	do		22.30	22.30
Oct. 3, 1907	do		17.10	17.10
May 12, 1904	Merryfield pumping plant	.90		.90
Aug. 5, 1904	do	.80		.80
May 30, 1905	do	.67		.67
Sept. 28, 1905	do	.40		.40
June 28, 1906	do	.80		.80
Aug. 24, 1906	do	.79		.79
June 19, 1907	do	.70		.70
Sept. 18, 1907	do	.70		.70
May 21, 1904	Mount Vernon Water Co.		.91	.91
Aug. 17, 1904	do		.91	.91
Sept. 4, 1903	Orange Land & Water Co. pumping plant	1.08		1.08
May 12, 1904	do	1.14		1.14
Aug. 17, 1904	do	1.12		1.12
June 9, 1905	do	.00		.00
Sept. 27, 1905	do	1.60		1.60
June 23, 1906	do	.00		.00
Aug. 27, 1906	do	.00		.00
June 25, 1907	do	.00		.00
Sept. 26, 1907	do	.00		.00
June —, 1898	Rabel ditch		5.37	5.37
Sept. —, 1898	do		3.07	3.07
Mar. —, 1899	do		2.26	2.26
June —, 1899	do		1.54	1.54
Aug. —, 1899	do		.94	.94
Mar. —, 1900	do		.54	.54
June —, 1900	do		.35	.35
Sept. —, 1900	do		.07	.07
Sept. 30, 1902	do		.00	.00
Aug. 17, 1903	do		.00	.00
May 13, 1904	do		.00	.00
Aug. 15, 1904	do		.00	.00
June 2, 1905	do		.00	.00
Sept. 5, 1905	do		.00	.00
June 14, 1906	do		.00	.00
Aug. 23, 1906	do		.00	.00
June 21, 1907	do		.60	.60
Sept. 28, 1907	do		1.00	1.00

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
June —, 1898	Ranchero ditch		1.75	1.75
Sept. —, 1898	do		1.64	1.64
Mar. —, 1899	do		1.64	1.64
June —, 1899	do		1.00	1.00
Aug. —, 1899	do		.41	.41
Mar. —, 1900	do		.24	.24
June —, 1900	do		.55	.55
Sept. —, 1900	do	0.80	1.33	2.13
Sept. 7, 1903	Rancheria pumping plant	1.09		1.09
May 12, 1904	do	1.46		1.46
Aug. 17, 1904	do	1.30		1.30
June 16, 1905	do	1.24		1.24
Sept. 27, 1905	do	1.10		1.10
June 20, 1906	do	2.00		2.00
Sept. 20, 1906	do	1.90		1.90
June 25, 1907	do	2.00		2.00
Sept. 26, 1907	do	2.00		2.00
June —, 1898	Riverside Highland Water Co. pumping plant, Lytle Creek	4.40		4.40
Sept. —, 1898	do	4.43		4.43
Mar. —, 1899	do	4.25		4.25
June —, 1899	do	2.08		2.08
Aug. —, 1899	do	2.00		2.00
Mar. —, 1900	do	6.50		6.50
June —, 1900	do	5.38		5.38
Sept. —, 1900	do	3.70		3.70
Sept. 4, 1903	do	8.98		8.98
May 12, 1904	do	7.92		7.92
Aug. 17, 1904	do	2.00		2.00
June 16, 1905	do	7.05		7.05
Sept. 28, 1905	do	8.00		8.00
June 20, 1906	do	3.00		3.00
Sept. 20, 1906	do	6.10		6.10
June 25, 1907	do	4.20		4.20
Sept. 26, 1907	do	5.40		5.40
May 12, 1904	Riverside Highland Water Co., Santa Ana River	.00		.00
Aug. 19, 1904	do	6.43	.42	6.85
May 31, 1905	do	6.36		6.36
Sept. 4, 1905	do	7.60	.40	8.00
June 20, 1906	do	1.80	2.50	4.30
Sept. 7, 1906	do	6.90		6.90
June 20, 1907	do	2.50	1.60	4.10
Sept. 25, 1907	do	3.60		3.60
June —, 1898	Riverside Water Co. upper canal	18.60	41.04	59.64
Sept. —, 1898	do	17.54	43.80	61.34
Mar. —, 1899	do	18.04	42.49	60.53
June —, 1899	do	17.50	36.42	53.92
Aug. —, 1899	do	27.50	24.54	52.04
Mar. —, 1900	do	24.54	37.40	61.94
June —, 1900	do	32.36	20.58	52.94
Sept. —, 1900	do	27.00	34.62	61.62
Sept. 30, 1902	do	26.08	21.89	47.97
Sept. 1, 1903	do	23.89	32.01	55.90
May 31, 1904	do	29.44	12.96	42.40
July 29, 1904	do	19.85	18.28	38.13
May 31, 1905	do	25.33	24.85	50.18
Aug. 31, 1905	do	21.20	12.90	34.10
June 19, 1906	do	2.90	38.69	41.59
Aug. 31, 1906	do	23.65	26.35	50.00
June 19, 1907	do		63.00	63.00
Sept. 26, 1907	do	16.60	30.00	46.60
June —, 1898	Riverside Water Co. mill pumping plant	1.94		1.94
Sept. —, 1898	do	2.04		2.04
Mar. —, 1899	do	.00		.00
June —, 1899	do	1.77		1.77
Aug. —, 1899	do	1.67		1.67
Mar. —, 1900	do	.00		.00
June —, 1900	do	1.68		1.68
Sept. —, 1900	do	1.52		1.52
Sept. 30, 1902	do	1.28		1.28
May 31, 1904	do	1.32		1.32
July 29, 1904	do	1.38		1.38
May 31, 1905	do	.92		.92
Aug. 31, 1905	do	1.30		1.30
June 23, 1906	do	.00		.00
Aug. 31, 1906	do	.00		.00
June 27, 1907	do	.00		.00
Sept. 20, 1907	do	.00		.00
June —, 1898	Riverside Water Co. flume		3.12	3.12
Sept. —, 1898	do		3.36	3.36

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
Mar. —, 1899	Riverside Water Co. flume		5.30	5.39
June —, 1899	do		7.29	7.29
Aug. —, 1899	do		2.56	2.56
Mar. —, 1900	do		2.67	2.67
June —, 1900	do		2.17	2.17
Sept. —, 1900	do		.94	.94
Sept. 30, 1902	do		.50	.50
Aug. 18, 1903	do		.00	.00
May 31, 1904	do		2.68	2.68
July 29, 1904	do		.00	.00
May 31, 1905	do		2.24	2.24
Aug. 31, 1905	do		.00	.00
June 20, 1906	do		16.70	16.70
Aug. 31, 1906	do		.00	.00
June 19, 1907	do		.00	.00
Sept. 20, 1907	do		.00	.00
Oct. 11, 1902	Riverside Water Co. flume pump No. 1	2.95		2.95
Aug. 18, 1903	do	4.08		4.08
May 31, 1904	do	1.79		1.79
July 29, 1904	do	2.99		2.99
May 26, 1905	do	3.95		3.95
Aug. 31, 1905	do	3.60		3.60
June 25, 1906	do	.00		.00
Aug. 31, 1906	do	.00		.00
June 27, 1907	do	.00		.00
Sept. 20, 1907	do	.00		.00
Oct. 11, 1902	Riverside Water Co. flume pump No. 2	2.08		2.08
Aug. 18, 1903	do	2.63		2.63
May 31, 1904	do	1.76		1.76
July 29, 1904	do	2.52		2.52
May 26, 1905	do	3.18		3.18
Aug. 31, 1905	do	3.00		3.00
June 25, 1906	do	.00		.00
Aug. 31, 1906	do	.00		.00
June 27, 1907	do	.00		.00
Sept. 20, 1907	do	.00		.00
Aug. 19, 1903	Riverside Water Co. river ditch pump	5.79		5.79
May 21, 1904	do	9.33		9.33
Aug. 23, 1904	do	9.14		9.14
Oct. 11, 1902	Rogers pumping plant	4.38		4.38
Aug. 19, 1903	do	4.44		4.44
May 31, 1904	do	.60		.60
Aug. 15, 1904	do	.00		.00
June 6, 1905	do		.00	.00
Aug. 31, 1905	do	.00		.00
June 19, 1906	do	1.60		1.60
Sept. 7, 1906	do	2.40		2.40
June 19, 1907	do	.00		.00
Sept. 18, 1907	do	2.20		2.20
May 21, 1904	Rosedale Water Co. pumping plant	.60		.60
Aug. 12, 1904	do	.50		.50
June 6, 1905	do	.30		.30
Sept. 28, 1905	do	.00		.00
June 28, 1906	do	.50		.50
Aug. 24, 1906	do	.00		.00
June 19, 1907	do	.00		.00
Sept. 28, 1907	do	.40		.40
June —, 1898	Shay or Stout dam ditch		2.30	2.30
Sept. —, 1898	do		2.08	2.08
Mar. —, 1899	do		2.23	2.23
June —, 1899	do		1.13	1.13
Aug. —, 1899	do		.90	.90
Mar. —, 1900	do		.507	.507
June —, 1900	do		.40	.40
Sept. —, 1900	do		.16	.18
Sept. 30, 1902	do		.00	.00
Aug. 17, 1903	do		.00	.00
May 13, 1904	do		.00	.00
Aug. 15, 1904	do		.00	.00
June 2, 1905	do		.00	.00
Sept. 5, 1905	do		.00	.00
June 25, 1906	do		.00	.00
Aug. 23, 1906	do		.24	.24
June 21, 1907	do		2.60	2.60
Sept. 28, 1907	do		1.30	1.30
June —, 1898	Swamp ditch		1.00	1.00
Sept. —, 1898	do		1.02	1.02
Mar. —, 1899	do		.85	.85
June —, 1899	do		.77	.77
Aug. —, 1899	do		.69	.69

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Natural flow, in second-feet, of return water compared with developed water in San Bernardino Valley above Colton, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
Mar. —, 1900	Swamp ditch		0.70	0.70
June —, 1900	do		.89	.89
Sept. —, 1900	do		.86	.86
Oct. 14, 1902	do		.93	.93
Sept. 7, 1903	do		.42	.42
June 4, 1904	do		.51	.51
Aug. 12, 1904	do		.47	.47
May 31, 1905	do		.47	.47
Aug. 14, 1905	do		.40	.40
June 23, 1906	do		.80	.80
Aug. 29, 1906	do		.64	.64
June 20, 1907	do		2.20	2.20
Sept. 21, 1907	do		1.00	1.00
June —, 1898	Ward & Warren ditch	1.60	.72	2.32
Sept. —, 1898	do	1.60	.72	2.32
Mar. —, 1899	do	1.60	1.49	3.09
June —, 1899	do	.615		.615
Aug. —, 1899	do	1.56		1.56
Mar. —, 1900	do	1.60	.95	2.55
June —, 1900	do	1.60	.10	1.70
Sept. —, 1900	do	.53		.53
Oct. 14, 1902	do	.30	1.58	1.88
Aug. 21, 1903	do	1.44	.17	1.61
June 4, 1904	do		.00	.00
Aug. 20, 1904	do		.00	.00
May 31, 1905	do	.00		.00
Sept. 4, 1905	do		.00	.00
June 20, 1906	do		5.10	5.10
Sept. 7, 1906	do		.06	.06
June 20, 1907	do		2.10	2.10
Sept. 25, 1907	do		.00	.00
Sept. 29, 1902	West Riverside Water Co. 350-inch pumping plant	5.94		5.94
Aug. 19, 1903	do	3.41		3.41
May 21, 1904	do	6.52		6.52
Aug. 19, 1904	do	5.35		5.35
June 6, 1905	do	2.00		2.00
Sept. 28, 1905	do	5.60		5.60
June 27, 1906	do	6.00		6.00
Aug. 31, 1906	do	6.50		6.50
June 19, 1907	do		10.30	10.30
Sept. 21, 1907	do	8.80		8.80
June —, 1898	Whiting ditch		.26	.26
Sept. —, 1898	do		.01	.01
Mar. —, 1899	do		.76	.76
June —, 1899	do		.246	.246
Aug. —, 1899	do		.01	.01
Mar. —, 1900	do		1.12	1.12
June —, 1900	do		.13	.13
Sept. —, 1900	do		.00	.00
Oct. 13, 1902	do		.00	.00
Aug. 17, 1903	do		.00	.00
June 4, 1904	do		.00	.00
Aug. 20, 1904	do		.00	.00
June 6, 1905	do		.00	.00
Sept. 4, 1905	do		.00	.00
Oct. 24, 1906	do		.00	.00
June 25, 1907	do		.00	.00
Sept. 25, 1907	Whiting ditch		.00	.00
June —, 1898	Whitlock ditch		.34	.34
Sept. —, 1898	do		.38	.38
Mar. —, 1899	do		.47	.47
June —, 1899	do		.28	.28
Aug. —, 1899	do		.09	.09
Mar. —, 1900	do		.23	.23
June —, 1900	do		.00	.09
Sept. —, 1900	do		.00	.00
Oct. 13, 1902	do		.00	.00
Aug. 22, 1903	do		.00	.00
June 4, 1904	do		.00	.00
Aug. 20, 1904	do		.00	.00
June 19, 1905	do		.00	.00
Sept. 2, 1905	do		.00	.00
June 22, 1906	do		.00	.00
Oct. 24, 1906	do		.00	.00
June 21, 1907	do		.00	.00
Sept. 20, 1907	do		.00	.00
Sept. 9, 1903	Wozencraft tract, artesian well	.23		.23

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Return waters, in second-feet, in San Bernardino Valley below Slover Mountain and above Riverside Narrows, Calif., for 1898–1907.

[By K. Sanborn, engineer Riverside Water Co.]

Date.	Location.	Developed.	Natural.	Total.
		Sec.-ft.	*Sec.-ft.*	*Sec.-ft.*
Sept. 29, 1902	Alvitrez ditch at headgate, east end of West Riverside Bridge		1.96	1.96
Aug. 20, 1903	do		3.10	3.10
May 13, 1904	do		1.63	1.63
Aug. 8, 1904	do		2.23	2.23
May 27, 1905	do		3.00	3.00
Aug. 11, 1905	do		1.30	1.30
June 27, 1906	do		5.20	5.20
Aug. 28, 1906	do		5.00	5.00
June 24, 1907	do		.70	.70
Sept. 19, 1907	do		2.50	2.50
June 29, 1906	California Orange Co., pumping plant	1.30		1.30
Sept. 7, 1906	do	1.40		1.40
June 24, 1907	do	.00		.00
Sept. 20, 1907	do	1.50		1.50
Aug. 18, 1904	Cuttle's pumping plant	2.45		2.45
June 6, 1905	do	2.50		2.50
Oct. 4, 1905	do	2.25		2.25
June 29, 1906	do	2.50		2.50
Sept. 7, 1906	do	2.50		2.50
June 24, 1907	do	.00		.00
Sept. 20, 1907	do	2.50		2.50
Sept. 29, 1902	Evans Island or Jansen ditch, under west end of West Riverside Bridge		5.35	5.35
Aug. 20, 1903	do		4.71	4.71
May 13, 1904	do		3.43	3.43
Aug. 8, 1904	do		.00	.00
May 27, 1905	do		.00	.00
Aug. 11, 1905	do		.60	.00
June 29, 1906	do		.00	.00
Sept. 3, 1906	do		.00	.00
June 24, 1907	do		4.70	4.70
Sept. 19, 1907	do		.00	.00
Sept. 29, 1902	Evans ditch near Riverside County line		2.17	2.17
Aug. 21, 1903	do		.81	.81
May 16, 1904	do		2.53	2.53
Aug. 11, 1904	do		.00	.00
May 29, 1905	do		.00	.00
Aug. 11, 1905	do		.50	.50
June 26, 1906	do		1.90	1.90
Sept. 3, 1906	do		.00	.00
June 19, 1907	do		.00	.00
Sept. 20, 1907	do		.00	.00
Sept. 29, 1902	Evans or Smith ditch, 1 mile below Riverside County line		.53	.53
Aug. 22, 1903	do		.70	.70
May 16, 1904	do		2.03	2.03
Aug. 11, 1904	do		1.31	1.31
May 29, 1905	do		2.30	2.30
Aug. 14, 1905	do		.00	.00
June 25, 1906	do		1.70	1.70
Sept. 3, 1906	do		.00	.00
June 19, 1907	do		5.70	5.70
Sept. 20, 1907	do		.00	.00
June 2, 1904	Evans well ditch, Santa Ana Street	.51		.51
Aug. 8, 1904	do	.04		.04
May 29, 1905	do	.00		.00
Aug. 9, 1905	do	1.70		1.70
June 23, 1906	do		.00	.00
Sept. 3, 1906	do		.00	.00
June 19, 1907	do		.00	.00
Sept. 23, 1907	do	.80		.80
June 3, 1904	Evans pipe line to China Gardens at headworks		1.41	1.41
Aug. 8, 1904	do		.00	.00
May 30, 1905	do		.00	.00
Aug. 11, 1905	do		.00	.00
June 29, 1906	do		.00	.00
Sept. 13, 1906	do		.00	.00
June 24, 1907	do		1.40	1.40
Sept. 19, 1907	do		.00	.00
Aug. 8, 1904	Evans pumping plant, 1,000 feet south of west end of West Riverside Bridge	3.03		3.03
May 27, 1905	do	2.87		2.87
Sept. 5, 1905	do	4.20		4.20
June 27, 1906	do	3.60		3.60
Aug. 28, 1906	do	5.53		5.53
June 24, 1907	do	.00		.00
Sept. 19, 1907	do		.00	.00

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Return waters, in second-feet, in San Bernardino Valley below Slover Mountain and above Riverside Narrows, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
		Sec.-ft.	*Sec.-ft.*	*Sec.-ft.*
Aug. 18, 1904	Evans Jurupa pumping plant	2.00		2.00
June 19, 1905	do	2.00		2.00
Oct. 4, 1905	do	.00		.00
June 29, 1906	do	.00		.00
June 24, 1907	do	.00		.00
Sept. 19, 1907	do		0.00	.00
June 3, 1904	Ferris Gallagher ditch near headworks		1.72	1.72
Aug. 8, 1904	do		1.71	1.71
May 30, 1905	do		2.20	2.20
Aug. 14, 1905	do		2.00	2.00
June 30, 1906	do		2.90	2.90
Sept. 13, 1906	do		3.25	3.25
June 24, 1907	do		.60	.60
Sept. 19, 1907	do		1.10	1.10
June 3, 1904	Gallagher ditch		.85	.85
Aug. 18, 1904	do		.92	.92
May 30, 1905	do		.60	.60
Aug. 14, 1905	do		1.20	1.20
June 30, 1906	do		.76	.76
Sept. 13, 1906	do		.00	.00
June 24, 1907	do		1.60	1.60
Sept. 19, 1907	do		.00	.00
June 3, 1904	Jurupa pumping plant, to supply Rubidoux ditch	.00		.00
Aug. 11, 1904	do	4.35		4.35
May 29, 1905	do	2.10		2.10
Aug. 15, 1905	do	4.80		4.80
June 26, 1906	do	2.30		2.30
Sept. 3, 1906	do	5.20		5.20
June 22, 1907	do	.00		.00
Sept. 23, 1907	do	4.80		4.80
June —, 1898	Lower canal, Riverside Water Co.		10.30	10.30
Sept. —, 1898	do		7.70	7.70
Mar. —, 1899	do		16.20	16.20
June —, 1899	do		9.00	9.00
Aug. —, 1899	do		7.38	7.38
Mar. —, 1900	do		8.00	8.00
June —, 1900	do		7.16	7.16
July 27, 1900	do		7.13	7.13
Sept. —, 1900	do		6.69	6.69
Sept. 29, 1902	do		3.07	3.07
Aug. 21, 1903	do		2.05	2.05
May 21, 1904	do		3.15	3.15
Aug. 11, 1904	do		.39	.39
May 30, 1905	do		2.20	2.20
Sept. 5, 1905	do		.60	.60
June 27, 1906	do		3.10	3.10
Sept. 3, 1906	do		.00	.00
June 19, 1907	do		11.70	11.70
Sept. 23, 1907	do		.00	.00
June 6, 1905	Pond's pumping plant	2.50		2.50
Oct. 4, 1905	do	2.25		2.25
June 29, 1906	do	1.30		1.30
Sept. 7, 1906	do	2.50		2.50
June 24, 1907	do	2.50		2.50
Sept. 23, 1907	do	1.50		1.50
May 16, 1904	Riverside Power Co. canal at Pedley crossing		38.30	38.30
Aug. 18, 1904	do		29.50	29.50
June 15, 1905	do		30.60	30.60
Sept. 22, 1905	do		27.00	27.00
June 21, 1906	do		27.70	27.70
Sept. 29, 1906	do		35.00	35.00
June 26, 1907	do		49.50	49.50
Sept. 19, 1907	do		36.00	36.00
June 19, 1905	Rivero Land Co. pumping plant	.80		.80
Oct. 4, 1905	do	.60		.60
June 29, 1906	Rivino Land Co. pumping plant No. 1	.80		.80
Sept. 7, 1906	do	.70		.70
June 24, 1907	do	1.35		1.35
Sept. 23, 1907	do	1.00		1.00
Sept. 13, 1906	Rivino Land Co. pumping plant No. 2	.83		.83
June 26, 1907	do	2.30		2.30
Sept. 23, 1907	do	.00		.00
Sept. 29, 1902	Roubidoux ditch at measuring box		7.19	7.19
Aug. 21, 1903	do	1.74	4.78	6.52
May 16, 1904	do		6.49	6.49
Aug. 8, 1904	do		2.82	2.82
May 29, 1905	do		4.92	4.92
Aug. 15, 1905	do		7.20	7.20
June 26, 1906	do		4.40	4.40

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Return waters, in second feet, in San Bernardino Valley below Slover Mountain and above Riverside Narrows, Calif., for 1898–1907—Continued.

Date.	Location.	Developed.	Natural.	Total.
		Sec.-ft.	*Sec.-ft.*	*Sec.-ft.*
Sept. 3, 1906	Roubidoux ditch at measuring box		2.09	2.09
June 19, 1907	do		9.80	9.80
Sept. 22, 1907	do	4.80	1.60	6.40
Oct. 16, 1902	Santa Ana River at Riverside Narrows		43.25	43.25
Aug. 25, 1903	do		40.70	40.70
Aug. 8, 1904	Spanishtown, pumping plant at wier at end of main	3.22		3.22
May 29, 1905	do	4.17		4.17
Aug. 11, 1905	do	2.60		2.60
June 28, 1906	do	4.60		4.60
Sept. 3, 1906	do	.00		.00
June 22, 1907	do	.00		.00
Sept. 24, 1907	do	.00		.00
Aug. 8, 1904	Springbrook, pumping plant at weir at end of main		4.84	4.84
May 27, 1905	do		5.58	5.58
Aug. 11, 1905	do		3.60	3.60
June 25, 1906	do	.00		.00
Sept. 3, 1906	do	.00		.00
June 22, 1907	do	.00		.00
Sept. 24, 1907	do		.00	.00
Aug. 8, 1904	Soquel ditch		1.49	1.49
May 27, 1905	do		3.20	3.20
Aug. 11, 1905	do		2.70	2.70
June 27, 1906	do		6.60	6.60
Aug. 28, 1906	do		5.30	5.30
June 24, 1907	do		1.90	1.90
Sept. 19, 1907	do		3.70	3.70
June 3, 1904	Zimmerman pipe line		.00	.00
Aug. 8, 1904	do		1.08	1.08
May 30, 1905	do		1.40	1.40
Aug. 14, 1905	do		1.20	1.20
June 30, 1906	do		2.20	2.20
Sept. 13, 1906	do		.00	.00
June 24, 1907	do		.00	.00
Sept. 18, 1907	do		.00	.00

SAN GABRIEL RIVER BASIN.

GENERAL FEATURES.

San Gabriel River is one of the three most important streams traversing the valley of southern California. Its drainage basin lies wholly in Los Angeles County west of the Santa Ana basin and east of the Los Angeles basin and stretches from the crest of the Sierra Madre to the Pacific, a distance of about 50 miles. Its total drainage area is about 700 square miles, about one-third of which consists of mountain slopes, which contribute practically all of the run-off except in heavy storms. The remaining two-thirds is embraced in the San Gabriel Valley at the base of the mountains and in the coastal plain southeast of the city of Los Angeles.

The mountainous part of the basin is somewhat rectangular in shape. Its length east and west is about 25 miles and its width about 10 miles. It lies on the southern slope of the Sierra Madre, opposite the basins of Rock and Little Rock creeks, at the north, and on the southern slope of the San Gabriel Range, through which the river breaks near Azusa and enters the San Gabriel Valley.

The main stream is formed by the junction of two principal forks, one from the north and east and the other from the west. Each of the branches receives many tributaries from the crests of the sur-

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rounding ranges. The headwaters come from the western slope of San Antonio Peak (Old Baldy), altitude 10,080 feet, and from the southern slope of other high peaks at the north, such as North Baldy and Islip mountains. The west fork drains the northern slope of Mount Wilson, the eastern and northern slopes of San Gabriel Peak, and a portion of the southern slopes of the main range to the north. It joins the main stream about 8 miles above the mouth of the canyon. The general course of the stream is southwestward. After leaving the mountains it traverses San Gabriel Valley in a wide wash of sand, gravel, and bowlders, then breaks through the range of foothills separating San Gabriel Valley from the coastal plain at a point called The Narrows, about 5 miles northwest of Whittier, and enters the coastal plain, across which it flows to its mouth in Alamitos Bay, a few miles east of Long Beach. The total length of the stream is about 65 or 70 miles.

The principal tributaries of San Gabriel River are Fish Fork and Cattle Creek from the east and Iron and West forks from the west.

Altitudes in San Gabriel basin range from 20 to 200 feet on the coastal plain, from 200 to 900 feet in San Gabriel Valley, and from 1,000 to 10,000 feet in the mountains. The range of foothills near Whittier has an altitude of about 1,250 feet. The topography is rough and rugged in the mountains, especially in the upper part, where deep and narrow canyons exist. The geologic formation is granitic, with a light soil covering The San Gabriel Valley is more or less rolling and is composed of granitic wash from the mountains.

The basin is rather poorly forested, having a sparse timber growth on the higher slopes and brush and some scattering timber on the middle and lower elevations.

The mean annual precipitation in this basin varies from 15 to 20 inches in the valley area and from 20 to 40 inches in the mountains. It occurs almost entirely as rain except on the higher peaks, where snow falls during the winter. On the northern slopes snow remains for several months.

The total summer flow of the stream is used for irrigation, and the same water may be put to use several times in its journey from mountain to sea. About 5 miles above the mouth of the canyon a power canal, with a capacity of about 100 second-feet, takes water from the left bank of the stream and delivers it to irrigation canals below the wheels near the mouth of the canyon for irrigation in San Gabriel Valley. Some other small diversions are made in the spring months at and below the mouth of the canyon for the same purpose. Most of the excess water issuing from the canyon sinks into the sands and gravels of San Gabriel Valley to augment the underground basins, which are drawn upon for irrigating the lower part of the valley.

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Above The Narrows at the lower end of the valley the underground flow is forced to the surface by a bedrock obstruction, and this water, with additional water developed from many wells, is diverted through ditches for irrigating the higher parts of the coastal plain. The seepage loss from irrigation joins the body of underground water and is recovered from pumped and flowing wells in the lower coastal plain. Storage sites are practically lacking in this basin and opportunities for power development are not great. Probably not more than one-fifth as much power could be obtained in this basin as in the basin of the Santa Ana.

GAGING-STATION RECORDS.

SAN GABRIEL RIVER ABOVE FISH FORK, NEAR AZUSA, CALIF.

LOCATION.—About 300 feet above junction of Fish Fork with San Gabriel River, in NE. ¼ sec. 32, T. 3 N., R. 8 W., in Angeles National Forest, about 15½ miles northeast of Azusa, Los Angeles County.

RECORDS AVAILABLE.—1900, 1901, 1910, and 1912 (low-water record only).

ELEVATION.—About 3,300 feet above sea level.

DRAINAGE AREA.—20.7 square miles.

DISCHARGE.—Computed from gage-height record giving head on weir.

COOPERATION.—Record furnished by Pacific Light & Power Corporation, through G. O. Newman, engineer.

Low-water record of daily discharge, in second-feet, of San Gabriel River above Fish Fork, near Azusa, Calif., for 1900, 1901, 1910, and 1912.

Day.	1900				1901		1910			1912		
	July.	Aug.	Sept.	Oct.	Aug.	Sept.	July.	Aug.	Sept.	July.	Aug.	Sept.
1	2.2	.....	.....	1.7	.....	.....	.....	11	7.5	.....	9.8	8.1
2	2.5	.....	.....	1.7	6.7	.....	.....	10	7.5	.....	.....	.....
3	2.5	1.7	.....	1.7	6.7	5.2	10	10	7.5	.....	.....	.....
4	2.4	1.8	.....	1.8	6.3	5.2	.....	10	7.5	.....	.....	.....
5	2.3	1.8	.....	1.8	.....	5.3	9.6	9.9	7.3	.....	.....	.....
6	2.3	1.8	.....	1.8	6.0	5.0	.....	9.9	7.3	.....	.....	7.8
7	2.1	1.8	.....	1.7	6.0	5.0	.....	9.9	7.2	.....	9.8	.....
8	2.1	1.8	.....	1.7	5.5	4.8	.....	9.8	7.3	.....	.....	.....
9	2.1	1.8	1.8	1.7	5.6	5.0	.....	9.5	7.2	.....	.....	.....
10	2.2	1.8	1.8	1.7	5.6	5.0	.....	9.6	7.2	.....	.....	7.7
11	2.1	1.8	1.7	1.8	5.3	5.0	13	9.5	.....	.....	9.1	.....
12	2.2	2.0	1.8	1.8	5.5	4.9	12	9.4	6.9	10	.....	.....
13	2.1	1.9	1.7	1.9	5.6	4.9	12	9.4	6.8	.....	.....	.....
14	2.1	1.9	1.8	.....	5.4	4.9	12	9.4	6.8	.....	.....	.....
15	2.0	1.8	1.8	.....	5.5	4.7	12	9.3	6.8	.....	.....	.....
16	2.1	1.7	1.8	.....	5.8	4.7	12	9.2	7.0	.....	.....	7.5
17	2.0	1.8	1.7	.....	5.8	4.7	12	9.2	7.1	.....	9.3	.....
18	2.0	1.7	1.7	.....	5.5	4.7	12	9.2	7.1	.....	.....	.....
19	2.0	1.7	1.7	.....	5.5	4.7	12	9.1	7.0	10	.....	.....
20	2.0	1.6	1.7	.....	5.4	4.7	13	9.1	7.0	.....	.....	.....
21	2.0	1.7	1.6	.....	5.5	4.8	12	9.0	7.0	.....	8.9	.....
22	2.0	1.7	1.6	.....	5.2	4.8	12	.....	7.0	.....	.....	6.8
23	2.0	1.7	1.8	.....	5.4	4.9	12	.....	7.1	10	.....	.....
24	2.0	1.7	1.9	.....	5.4	4.9	12	8.6	6.8	.....	.....	.....
25	2.2	1.7	1.8	.....	4.9	4.7	12	8.4	6.8	.....	8.4	.....
26	2.0	1.7	1.8	.....	4.5	4.5	12	8.4	6.8	10	.....	6.6
27	2.0	1.6	1.6	.....	5.1	4.4	12	8.3	6.7	.....	.....	.....
28	2.0	1.6	1.6	.....	.....	4.4	11	8.3	6.7	.....	.....	.....
29	1.8	1.7	1.7	.....	.....	4.4	11	8.3	6.7	.....	.....	.....
30	1.8	1.7	1.8	.....	4.9	4.4	11	8.2	6.8	10	.....	.....
31	.....	2.0	.....	.....	4.9	.....	11	7.9	.....	.....	.....	.....

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SAN GABRIEL RIVER AT HEADWORKS NEAR AZUSA, CALIF.

LOCATION.—In SE. ¼ sec. 31, T. 2 N., R. 9 W., at ford 500 feet above intake of Southern California Edison Co.'s canal, and about 6 miles northeast of Azusa, Los Angeles County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 1,290 feet above sea level.

RECORDS AVAILABLE.—December 9, 1912, to January 14, 1914.

GAGE.—Vertical staff bolted to granite cliff on right bank just above ford. This gage was destroyed by the flood of February, 1914.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Gravel and boulders; shifts during high water.

EXTREMES OF DISCHARGE.—1912–1914: Maximum stage recorded, 15.0 feet February 20, 1914 (discharge unknown); minimum stage recorded, 4.95 feet October 1, 2, 18 to 21, 26, and 27 (discharge, 14 second-feet).

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined. Gage read to hundredths twice daily; more frequently during floods. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record furnished by Pacific Light & Power Corporation.

Discharge measurements of San Gabriel River at headworks near Azusa, Calif., for 1912–1914.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 27	F. C. Ebert	4.68	31	May 28	F. C. Ebert	5.36	70
1913.				July 3	do	5.16	34
Jan. 11	F. C. Ebert	4.71	31	Aug. 11	do	5.00	18
Feb. 5	do	4.74	44	Sept. 27	do	4.97	15
9	do	5.49	175	1914.			
Apr. 22	H. D. McGlashan	5.42	100	Jan. 12	F. C. Ebert	5.15	39

Daily discharge, in second-feet, of San Gabriel River at headworks near Azusa, Calif., for 1912–1914.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.										
1	31	28	40	250	160	90	60	37	18	18
2	30	28	40	230	155	90	60	37	18	18
3	30	28	40	220	150	90	52	37	18	18
4	30	28	40	225	145	90	52	37	18	18
5	30	28	40	220	145	90	60	37	18	18
6	29	28	40	215	140	90	52	30	18	18
7	28	28	60	230	135	90	52	30	18	18
8	28	28	417	215	135	85	52	30	18	18
9	28	33	177	210	135	85	52	30	18	18
10	28	33	142	195	130	85	52	30	18	18
11	28	33	112	200	130	85	52	30	18	18
12	28	33	93	190	130	85	44	24	18	18
13	28	33	84	180	130	80	44	24	18	18
14	28	33	75	175	130	80	44	24	18	18
15	28	75	75	165	120	80	44	24	18	18
16	28	132	68	160	115	80	44	24	18	18
17	28	132	68	150	100	75	44	24	18	18
18	28	84	68	155	115	80	44	24	18	18
19	28	68	60	155	115	75	44	24	18	18
20	28	60	60	150	100	70	37	24	14	18
21	28	53	60	150	100	70	37	30	18	18
22	28	46	75	145	100	75	37	30	18	18
23	28	40	60	145	100	70	37	24	18	14
24	28	40	1,160	140	100	65	37	24	18	18
25	28	40	1,150	140	100	65	44	24	18	18
26	28	40	580	135	95	65	44	24	18	14
27	28	40	370	135	95	65	60	30	18	14
28	28	40	235	130	95	60	60	30	18	14
29	28	40	.....	130	95	60	44	24	18	14
30	28	40	.....	145	95	60	44	24	18	14
31	28	40	.....	155	.....	60	.....	24	18	.....

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Daily discharge, in second-feet, of San Gabriel River at headworks near Azusa, Calif., for 1912–1914—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Day.	Oct.	Nov.	Dec.	Jan.
1913–14.					1913–14.				
1	14	18	37	44	16	18	37	30	.....
2	14	24	37	44	17	18	37	30	.....
3	18	18	37	44	18	14	44	30	.....
4	18	18	37	44	19	14	177	30	.....
5	18	18	37	44	20	14	78	30	.....
6	18	18	37	44	21	14	60	30	.....
7	18	18	37	37	22	18	52	44	.....
8	18	18	37	37	23	18	52	60	.....
9	18	18	30	37	24	18	44	44	.....
10	18	18	30	37	25	18	44	44	.....
11	18	18	30	37	26	14	44	44	.....
12	18	24	30	37	27	14	44	44	.....
13	18	110	30	37	28	18	37	44	.....
14	18	69	30	52	29	18	37	44	.....
15	18	44	30	.....	30	18	37	44	.....
					31	18	.....	44	.....

NOTE.—Daily discharge Dec. 9, 1912, to Feb. 24, 1913, determined from rating curve poorly defined above 200 second-feet; May 28 to Sept. 30, 1913, from fairly well defined curves; Nov. 27 to Dec. 8, Pacific Light & Power Corp.'s record used; Feb. 25 to May 27, 1913, by shifting-control method.

Monthly discharge of San Gabriel River at headworks near Azusa, Calif., for 1912–1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1912–13.					1913–14.				
December	31	28	28.4	1,750	October	18	14	17.0	1,040
January	132	28	46.2	2,840	November	177	18	42.5	2,530
February	1,160	40	196	10,900	December	60	30	36.8	2,260
March	250	130	176	10,800	January 1–14	52	37	44.1	1,220
April	160	95	120	7,140					
May	90	60	77.4	4,760	The period	.....	.....	.....	7,050
June	60	37	47.6	2,830					
July	37	24	28.0	1,720					
August	18	14	17.9	1,100					
September	18	14	17.2	1,020					
The period	.....	.....	.....	44,900					

SAN GABRIEL RIVER NEAR AZUSA, CALIF.

LOCATION.—In NW. ¼ sec. 23, T. 1 N., R. 10 W., near road crossing at mouth of canyon, about half a mile above Southern California Edison Co.'s power house, and 2 miles north of Azusa, Los Angeles County.

DRAINAGE AREA.—222 square miles.

ELEVATION.—About 750 feet above sea level.

RECORDS AVAILABLE.—1894 to September 30, 1918.

GAGE.—Gurley graph water-stage recorder installed August, 1917 (see Pl. XII, *B*, *C*, p. 237), on left bank at a rock point above ford. Original location of gage was just above ford at mouth of canyon. On account of frequent changes in channel it has been necessary to install many gages at sites ranging from 1,000 feet above ford to 600 feet below. The various gages used from time to time have generally been installed at independent datums.

DISCHARGE MEASUREMENTS.—Made from cable 1,000 feet above ford or by wading near gage. (See Pl. VI, *C*, p. 17.)

CHANNEL AND CONTROL.—Gravel and boulders; shifts during high water. Left bank is high and rocky; right bank low and covered with brush. One channel at all stages.

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EXTREMES OF DISCHARGE.—1894–1918: Maximum stage recorded, 12.0 feet January 18, 1916 (discharge, 40,000 second-feet); no flow for several months each year.

DIVERSIONS.—Power canal of Southern California Edison Co., which heads about 5 miles above station, was completed in 1898. Water is occasionally diverted through tunnel, about 500 feet above ford, for irrigation. When it is measured, the discharge is included in tables of combined daily and monthly discharge.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating carves fairly well defined. Gage read to hundredths once daily; water-stage recorder used in 1918. Daily discharge ascertained by applying daily gage height to rating table or for periods not covered by rating curves, by shifting-control method. Records fair; those obtained previous to completion of Southern California Edison Co.'s canal, unsatisfactory.

Discharge measurements of San Gabriel River near Azusa, Calif., for 1895–1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1895.			
Nov. 5	J. B. Lippincott	1.5	10.4
Dec. 11	do		[b] .0
21	do	1.9	27.3
1896.			
Feb. 19	J. B. Lippincott	1.35	4.9
Mar. 22	do	2.27	69.9
Apr. 30	do		[b] .0
June 17	do		19.9
July 22	J. H. Quinton		[b] .0
Nov. 22	J. B. Lippincott		[b] .0
1897.			
Jan. 10	J. B. Lippincott	1.28	4.5
25	do	2.00	57.8
Feb. 1	do	5.1	1,725
2	do	3.4	422
Mar. 12	do	3.3	410
Apr. 29	do	2.6	162
May 24	do	2.08	76.0
June 30	A. S. Campbell		[b] .0
July 5	do		[b] .0
Aug. 7	do	2.33	[b] .0
Sept. 1	do	2.2	[b] .0
29	do	2.1	[b] .0
Nov. 13	do		7.6
27	J. B. Lippincott		3.5
28	do		
1898.			
Jan. 12	J. B. Lippincott	1.38	23.3
Mar. 8	H. F. Crowe		[b] .0
Apr. 2	J. B. Lippincott		[b] .0
May 10	do		[b] .0
17	do	1.03	15.4
July 1	F. H. Olmsted		[b] .0
21	J. B. Lippincott		[b] .0
Aug. 16	do		
21	do		
22	do		[b] .0
23	do		[b] .0
1899.			
Jan. 11	J. B. Lippincott	1.16	15.9
12		1.08	12.0
13		.90	16.0
14		.78	2.0
15		.70	1.0
16	H. F. Parkinson		
Aug. 26	do		[b] .0
Oct. 14		1.10	13.0
1900.			
Jan. 3	H. F. Parkinson		49.0
4			19.0
May 5			38.0
6			28.0
11			9.0
Nov. 21	S. G. Bennett		[b] .0
1901.			
Jan. 7	S. G. Bennett	6.15	[a] 2,710
Feb. 4	do	2.30	112
5	do	7.6	[a] 6,250
22	do	4.1	700
Mar. 5	do	3.0	248
29	do	2.25	96.5
July 11	do		[b] .0
Sept. 19	do		15.6
1902.			
Jan. 25	W. B. Clapp		[b] .0
Feb. 26	J. B. Lippincott	2.05	126
Mar. 6	J. Ahern	1.57	46.2
Apr. 8	S. G. Bennett	1.4	26.0
June 12	do		[b] .0
Sept. 1	W. B. Clapp		
1903.			
Jan. 29	C. A. Miller	3.20	467
Feb. 5	W. B. Clapp	1.70	56
Mar. 23	do	1.05	11
25	do	3.50	570
Apr. 1	do	7.95	8,430
May 23	do	2.20	97
June 10	do	1.70	38
13	do	1.50	20
Sept. 14	do		
1904.			
Mar. 18	Clapp and Murphy		[b] .0
Apr. 8	W. B. Clapp	1.30	14
19	Clapp and Webb	1.58	38
1905.			
Feb. 10	E. C. La Rue	2.20	190
17	do	3.50	560
Mar. 12	R. S. Hawley	9.30	11,055
14	W. B. Clapp	5.30	2,030
16	R. S. Hawley	5.80	3,225
24	do	4.20	611
31	do	3.80	490
Apr. 13	do	3.45	262
19	do	3.30	190
May 2	do	4.12	553
9	do	3.50	288
June 5	do	2.91	97
23	W. B. Clapp	2.60	41
July 5	Hawley and Clapp	2.28	17
Nov. 4	W. B. Clapp		[b] 00
1906.			
Jan. 19	M. P. Beeson	3.88	375
20	do	2.90	104
20	do	2.95	110
Feb. 10	do	1.70	3.5
15	do	2.70	60
15	do	2.70	60
17	do	2.60	

[a] Computed by Kutter's formula. [b] Stream dry.

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Discharge measurements of San Gabriel River near Azusa, Calif., for 1895–1918—Con.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1906.			
Mar. 12	M. P. Beeson	6.60	4,940
13	do	5.90	3,360
13	do	5.40	2,530
14	do	4.40	1,210
17	do	5.28	2,190
17	do	5.15	2,140
18	do	4.70	1,440
21	do	4.00	666
21	do	4.00	668
30	do	5.10	1,380
Apr. 4	do	4.50	757
18	do	3.80	394
18	do	3.80	436
May 11	do	3.30	209
11	do	3.30	212
June 1	do	3.55	292
1	do	3.55	273
29	C. H. Lee	2.90	157
July 30	W. B. Clapp	2.20	25
Dec. 28	W. B. Clapp and R. S. Hawley	5.20	1,500
1907.			
Jan. 2	Clapp and Martin	3.03	169
9	W. F. Martin	4.88	1,110
19	do	4.3	706
Feb. 7	do	4.8	1,020
28	do	4.2	618
Mar. 5	do	7.4	5,980
5	do	7.0	5,060
6	do	6.5	3,660
6	do	6.4	3,310
8	do	6.0	2,590
8	do	6.0	2,630
13	do	5.2	1,400
13	do	5.15	1,350
27	do	6.3	2,020
27	do	6.2	1,900
Apr. 5	do	5.4	1,240
5	do	5.4	1,290
15	do	5.0	893
30	W. B. Clapp	4.4	460
May 24	do	3.9	258
June 13	do	3.6	192
28	do	3.35	141
July 11	do	3.1	88
29	W. F. Martin	2.8	53
Aug. 22	do	2.1	2.8
1908.			
Jan. 27	W. F. Martin	3.8	271
Feb. 3	do	5.6	1,885
19	do	3.35	127
Apr. 14	W. B. Clapp	3.2	80
28	do	3.1	73
May 18	W. F. Martin	2.85	47
26	W. B. Clapp	2.55	31
June 13	do		4
1909.			
Feb. 26	Clapp and Martin	4.5	307
Mar. 22	W. F. Martin	4.95	697
Apr. 28	W. B. Clapp	4.4	296
May 14	do	4.2	230
June 3	do	3.62	110
22	do	3.4	62
July 8	do	3.1	27
21	do		1.8
Dec. 18	J. E. Stewart	3.28	24
1910.			
Jan. 3	J. E. Stewart	5.10	1,670
29	R. E. Haines	3.60	267
Feb. 28	Clapp and Stewart	3.15	80
Mar. 30	W. B. Clapp	3.30	108
Apr. 12	J. E. Stewart	3.10	84
29	W. B. Clapp	2.80	43
May 5	do	2.63	23
13	do	2.24	6
June 3	do	1.85	[d] 0
1911.			
Feb. 14	W. V. Hardy	4.12	503
18	do	3.90	371
Mar. 14	do	5.52	2,110
23	do	5.10	963
Apr. 16	do	4.60	580
21	do	4.20	350
May 16	do	4.10	214
June 2	do	3.90	121
22	do	3.70	76
Nov. 4	Ebert and Lee		[d] 0
1912.			
Mar. 19	F. C. Ebert	3.73	132
21	do	3.82	109
Apr. 9	do	4.13	183
May 17	do	3.70	82
29	do	3.53	43
1913.			
Feb. 10	F. C. Ebert	3.07	54
11	do	2.98	25
25	do	5.25	1,880
Mar. 3	do	3.59	124
4	W. H. Spear	3.59	137
Apr. 2	F. C. Ebert	3.38	64
22	H. D. McGlashan	3.07	27
May 7	F. C. Ebert	2.91	18
1914.			
Jan. 12	F. C. Ebert		[d] 0
Feb. 10	do	[a] 1.46	238
15	do	[a] 1.17	205
19	do	[b] 7.90	4,560
Apr. 14	do	[b] 4.94	294
30	do	[b] 4.93	277
May 7	do	[b] 4.89	221
16	do	[b] 4.87	197
June 2	do	[b] 4.71	132
24	do	[c] 1.65	65
29	do	[c] 1.57	53
July 6	do	[c] 1.20	19
13	do	[c] 1.02	12
20	do	[c] .87	5.7
27	do	[c] .70	3.0
Aug. 3	do		[d] 0
Dec. 23	do	.94	23
28	do		2.1
1915.			
Feb. 18	F. C. Ebert	5.95	420
22	do	5.80	351
25	do	5.85	404
Mar. 13	do	5.56	256
17	do	5.62	274
22	do	5.54	262
24	do	4.73	262
Apr. 9	do	4.67	220
25	do	4.52	166
May 13	do	4.84	286
June 15	do	4.13	69
28	do	1.48	23
July 5	do	1.48	27
17	do	1.16	3.5
1916.			
Jan. 3	F. C. Ebert	1.82	63
4	do	1.62	39
12	do	2.03	107
13	do	1.88	76
15	do	2.08	117
17	do	10.30	18,400
18	do	11.50	32,400
19	do	7.38	4,300
19	do	7.10	3,750
20	do	6.62	2,380
21	do	6.34	1,570
24	do	5.80	848
Feb. 10	do	5.07	638
14	do	4.98	541
25	do	4.62	346

[a] Temporary gage installed Feb. 10, 1914.
[b] Old gage at original section at the ford.
[c] Temporary gage installed June 11, 1914.
[d] Stream dry.

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Discharge measurements of San Gabriel River near Azusa, Calif., for 1895–1918—Contd.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Feb. 26	F. C. Ebert	4.92	526	Mar. 26	F. C. Ebert	3.80	90
Mar. 2	do	4.90	491	Apr. 7	do	3.55	58
8	do	4.92	522	19	H. J. Tompkins	3.50	43
29	do	4.74	398	26	do	3.50	44
Apr. 5	H. J. Tompkins	4.45	335	May 17	F. C. Ebert	1.02	20
7	F. C. Ebert	1.34	283	28	do	.72	4.2
11	Dort and Tompkins	1.28	298	1918.			
25	do	.90	169	Feb. 22	F. C. Ebert	6.82	2,730
May 1	F. C. Ebert	.92	171	23	do	5.10	487
5	do	.59	104	25	do	4.68	234
8	H. J. Tompkins	.52	92	26	do	4.86	322
19	F. C. Ebert	.40	74	Mar. 4	do	4.11	50
31	J. C. Dort	.19	43	7	C. W. Sopp	8.20	5,650
June 5	F. C. Ebert	—.13	14	8	do	6.52	1,930
10	J. C. Dort	—.21	8.9	11	do	7.60	4,280
30	H. J. Tompkins		[a] .0	15	H. J. Tompkins	6.90	1,180
Oct. 25	do		1.1	18	do	6.20	680
1917.				21	F. C. Ebert	5.89	626
Jan. 3	F. C. Ebert	3.60	48	28	do	5.75	542
9	H. J. Tompkins	1.00	24	30	do	5.38	356
16	F. C. Ebert	3.61	54	Apr. 7	do	5.24	317
26	do	1.46	61	13	H. J. Tompkins	5.10	239
Feb. 9	do	1.20	36	19	do	4.57	118
15	H. J. Tompkins	1.06	22	26	do	4.48	119
22	J. C. Dort	4.94	582	May 1	F. C. Ebert	4.20	77
24	H. J. Tompkins	4.45	266	7	C. W. Sopp	4.08	72
24	F. C. Ebert	4.40	269	10	F. C. Ebert	3.86	53
25	do	5.26	748	17	C. W. Sopp	3.64	42
Mar. 6	do	4.12	173	18	do	3.29	20
15	H. J. Tompkins	3.89	133	24	do	2.73	3.0
17	F. C. Ebert	3.85	92	June 5	F. C. Ebert	2.52	.3
23	do	3.81	94				

NOTE.—1915: Measurements beginning Mar. 24 referred to new gage; beginning June 28 referred to temporary gage.

1916: Lower gage read Jan. 3 to 15. Gage above ford read 5.15 feet Jan. 12. New gage read Apr. 7 to June 10; old gage read 4.35, Apr. 7; old gage read 4.32 Apr. 11. Measurements on Jan. 17 and 18 were made by floats; coefficient of 0.80 used to reduce surface velocities to mean velocities.

1917: Upper gage read Jan. 9 and 26, Feb. 9 and 15, and May 17 and 28, 1917.

[a] Stream dry.

Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1894.						1894.					
1	34	27	17	11	23	16	45	22	13	13	14
2	35	27	17	11	21	17	38	24	13	13	14
3	35	26	15	11	18	18	34	24	11	11	13
4	35	26	15	10	18	19	32	24	11	14	13
5	34	25	15	11	18	20	33	24	9	13	13
6	34	26	16	13	17	21	32	21	9	13	13
7	33	26	15	14	17	22	32	21	9	13	13
8	33	26	14	15	15	23	30	21	9	13	13
9	32	22	14	15	15	24	28	21	10	13	13
10	31	22	14	15	15	25	27	19	10	14	13
11	30	22	14	14	14	26	27	19	10	17	13
12	30	23	14	15	15	27	27	18	9	15	13
13	30	24	14	14	15	28	27	18	9	15	13
14	31	24	13	14	15	29	27	18	9	27	14
15	50	22	13	14	14	30	27	17	10	21	16
						31	27	.....	11	22	.....

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Oct.	Nov.	Aug.	Sept.	Day.	Oct.	Nov.	Aug.	Sept.
1894-95.					1894-95.				
1	16	14	.....	39	16	13	.....	43	32
2	15	14	.....	38	17	13	.....	42	31
3	14	13	.....	36	18	13	.....	41	31
4	14	13	.....	36	19	13	.....	40	31
5	13	13	.....	36	20	13	.....	40	31
6	13	13	.....	36	21	13	.....	39	31
7	14	13	.....	36	22	14	.....	39	31
8	14	13	47	35	23	14	.....	39	30
9	13	13	47	34	24	14	.....	39	29
10	14	13	47	34	25	14	.....	38	29
11	14	13	46	33	26	14	.....	38	29
12	14	13	46	32	27	14	.....	39	29
13	13	13	46	32	28	14	.....	39	29
14	13	13	45	32	29	14	.....	40	29
15	13	13	44	32	30	14	.....	40	29
					31	14	.....	40	.....

Day.	Oct.	Nov.	Day.	Oct.	Nov.	Day.	Oct.	Nov.
1895.			1895.			1895.		
1	29	29	11	28	.....	21	32	.....
2	28	29	12	28	.....	22	32	.....
3	28	29	13	27	.....	23	32	.....
4	29	50	14	27	.....	24	31	.....
5	29	.....	15	29	.....	25	30	.....
6	29	.....	16	30	.....	26	30	.....
7	29	.....	17	30	.....	27	30	.....
8	29	.....	18	30	.....	28	30	.....
9	28	.....	19	31	.....	29	30	.....
10	28	.....	20	31	.....	30	30	.....
						31	29	.....

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.
1896.					1896.				
1	10.3	a 26.2	a 2.7	46	16	0	a 3.9	a 92.3	8.8
2	a 9.8	27.5	2.3	35.8	17	12	a 7.6	86	8.8
3	a 9.3	a 26	36	27.5	18	8.8	a 6.3	86	6
4	8.8	a 21.4	109	21.5	19	a 15	5.0	a 82	.....
5	2.3	a 22.8	94	a 24.5	20	21.2	3.1	a 78	.....
6	a 1.5	21.2	59	27.5	21	a 21.2	a 3.1	a 74	.....
7	a .8	a 20	a 61.7	a 23.2	22	a 21.2	a 3.1	70	.....
8	0	18.6	a 64.4	19	23	a 21.2	a 3.1	a 68.5	.....
9	0	a 17	67	16	24	a 21.2	a 3.1	67	.....
10	0	a 15.5	134	16	25	a 18.6	a 3.1	a 59.4	.....
11	0	11	a 127.2	14	26	16	a 3.1	a 51.7	.....
12	0	14	a 120.3	10.4	27	a 18.6	a 3.1	44	.....
13	0	a 12.7	a 113.4	9.6	28	21.2	a 3.1	a 59.5	.....
14	0	a 11.4	a 106.5	8.8	29	a 22.4	3.1	75	.....
15	0	a 10.2	a 99.7	8.8	30	a 23.7	.....	67	.....
					31	a 25	.....	56	.....

a Estimated.

NOTE.—No flow Apr. 19 to Sept. 30.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1896–97.									
1	0.0	5	[a] 0.5		1,710	275	310		28
2	0	4	[a] .5		780	275	275		
3	0	2.6	[a] .2		275	310	310	130	
4	0	1.3	[a] .2		243	292	275		28
5	0	2.0	[a] .1	5	142	292	275	130	
6	0	1.3	[a] .2	5	155	1,210	310		
7	0	[a] 1.7	[a] .3		130	1,765	310		
8	0	2.0	[a] .4		119	965	310	130	
9	0	.5	.4		108	625	310		
10	0	.3	[a] .3	6	99	470	328		
11	0	[a] .3	[a] .2	36	82	445	310		
12	0	[a] .3	.0		73	420	328	104	
13	0	[a] .3	[a] 1.6		67	382	345		
14	0	[a] .3	[a] 3.3		59	345	345		
15	0	[a] .3	[a] 5		59	345	345	82	
16	0	[a] .3	6.6		46	345	300		
17	0	[a] .3	[a] 4.5		59	470	292		
18	0	[a] .3	2.3	46	1,600	275	292	73	
19	0	[a] .3	[a] 2.3		688	345	275	67	
20	0	[a] .3	2.3		520	328	243		
21	0	[a] .3	.5		345	310	243		
22	0	[a] .3	.5	46	275	275	214	52	
23	0	[a] .3	[a] .5	46	259	275	185		
24	0	16	[a] .5		243	275	170	59	
25	0	10	.5		275	310			
26	177	[a] 8.7	.5		292	310	148		
27	142	[a] 7.5	.5	44	275	310		36	
28	31.7	[a] 6.2	[a] .5		275	275			
29	14	5	[a] .5			310		32	
30	7.5	4	[a] .5	59		310		28	
31	8.8		12	52		310			

Day.	Jan.	Feb.	Mar.	May.	Day.	Jan.	Feb.	Mar.	May.
1898.[b]					1898.[b]				
1		8			16	21	31		24
2		9			17	19	31		11
3		9			18	17	11		9
4		9			19	17	11		9
5		.2		13	20	17	11		9
6		.2			21	17	11		
7		.2			22	17	11		
8		41			23	15	9		
9	26	31			24	15			
10	31	26	1		25	15			
11	26	21			26	15			
12	24	15			27	15			
13	24	13			28	15			
14	24	11			29	15			
15	21	9		63	30	15			
					31	9			

Day.	Jan.	Day.	Jan.	Day.	Jan.
1899.		1899.		1899.	
1		11	16	21	
2		12	12	22	
3		13	6	23	
4		14	2	24	
5		15	1	25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	
				31	

[a] Estimated. [b] River was dry on all other days during 1898.

NOTE.—No flow during year, except Jan. 11–15.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Oct.	Jan.	May.	Day.	Oct.	Jan.	May.	Day.	Oct.	Jan.	May.
1899–1900.				1899–1900.				1899–1900.			
1				11			9	21			
2				12				22			
3		49		13				23			
4		19		14	13			24			
5			38	15				25			
6			26	16				26			
7				17				27			
8				18				28			
9				19				29			
10				20				30			
								31			

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1901.							1901.						
1	0	70	370	75	200	27	16	30	540	103	44	34	
2	0	70	370	70	103	24	17	24	645	103	37	30	
3	0	70	335	70	98	24	18	18	645	98	37	27	
4	0	115	335	70	145	27	19	16	645	98	30	24	
5	0	2,600	248	70	80	24	20	12	708	98	30	24	
6	0	1,450	235	60	75	18	21	180	708	109	28	21	
7	1,450	930	222	60	70	13	22	122	770	92	27	18	
8	410	1,010	200	60	60	11	23	75	708	92	16	18	
9	145	770	180	56	56	11	24	60	645	86	16	24	
10	103	590	180	56	52	11	25	60	540	86	16	103	
11	80	450	170	56	44	10	26	60	450	80	16	60	
12	70	410	152	56	40		27	70	410	80	16	44	
13	52	370	145	52	37		28	103	370	109	13	44	
14	44	410	130	52	37		29	80		109	13	37	
15	37	540	115	48	37		30	70		80	44	30	
							31	70		80		30	

Day.	Oct.	Feb.	Mar.	Apr.	Day.	Oct.	Feb.	Mar.	Apr.
1901–2.					1901–2.				
1			6	13	16			13	0
2			318	37	17			10	0
3			77	13	18			8	0
4			40	12	19			21	0
5			30	11	20			12	0
6	10		42	10	21			7	12
7			18	18	22			4	4
8			18	18	23			7	
9			147	16	24			48	
10			85	13	25			30	
11			52	12	26		57	24	
12			37	10	27	20	27	16	
13			30	10	28	12	12	13	
14			24	8	29	8		12	
15			18	0	30			18	
					31			13	

NOTE.—River dry on all days for which discharge is not given. No record of daily discharge Nov. 21–30, 1900.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.
1902–3.							
1			134	0	5,844	286	55
2			125	0	1,917	268	50
3			65	0	1,398	268	50
4			78	10	945	250	44
5			54	350	808	250	40
6			50	310	652	250	35
7			45	273	472	250	35
8			50	310	417	220	35
9			24	273	370	190	35
10			30	211	286	190	35
11	18		34	164	250	164	27
12			34	144	286	164	21
13			41	125	220	139	21
14			34	107	205	139	20
15			34	92	220	139	18
16			24	78	323	139	16
17			18	54	1,150	118	15
18			13	37	590	98	14
19			10	30	590	98	12
20			7	24	652	98	10
21			1	18	590	98	10
22			0	13	590	98	10
23			0	12	590	98	6
24			0	144	523	108	4
25			0	504	472	83	4
26			0	202	472	83	
27			0	164	444	83	
28		2,930	0	164	323	68	
29		438		164	286	55	
30		144		273	286	55	
31		144		1,348		55	

Day.	Feb.	Mar.	Apr.	May.	Day.	Feb.	Mar.	Apr.	May.
1904.					1904.				
1		24	54	37	16		0	0	
2		13	45	37	17		0	0	
3		0	41	34	18		0	0	
4		0	37	30	19		0	50	
5		0	30	30	20		0	54	
6		0	30	27	21		0	37	
7		0	27	24	22		0	30	
8		0	24	21	23		1,068	27	
9		0	18	18	24		164	24	
10		0	13	15.5	25		92	18	
11		72	7	13	26		65	37	
12		18	3	10	27		54	34	
13		7	0	4	28	438	54	30	
14		0	0		29	54	92	30	
15		0	0		30		78	30	
					31		65		

NOTE.—River dry on all days for which discharge is not given.

Digitized by Google

Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1905.							
1	.....	.....	130	394	140	102	24
2	.....	231	130	372	351	102	21
3	.....	2,940	130	372	237	102	21
4	.....	1,685	130	351	209	90	21
5	.....	870	165	351	170	90	16
6	.....	351	165	331	170	90	16
7	.....	259	76	331	170	80	14
8	.....	207	76	311	402	80	12
9	.....	165	70	311	311	80	12
10	.....	147	70	292	273	71	12
11	.....	115	76	292	237	71	37
12	.....	101	11,058	273	237	71	12
13	.....	88	6,533	273	202	71	12
14	.....	88	2,080	255	202	71	10
15	.....	351	1,040	237	202	63	10
16	.....	560	3,145	237	202	55	8.5
17	.....	560	1,640	237	202	55	7
18	.....	300	1,180	220	202	55	4.5
19	.....	351	1,040	202	202	48	2.5
20	.....	289	762	202	170	42	.....
21	.....	250	687	202	170	42	.....
22	41	207	616	202	170	42	.....
23	.....	185	616	176	170	42	.....
24	.....	165	616	170	155	42	.....
25	.....	147	616	170	140	37	.....
26	.....	147	616	170	140	37	.....
27	.....	147	559	140	140	37	.....
28	.....	147	492	140	140	32	.....
29	.....	.....	492	140	140	28	.....
30	.....	.....	441	126	126	28	.....
31	.....	.....	394	.....	113	.....	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906.									
1	.....	.....	.....	1,030	245	310	116	17	.....
2	.....	.....	.....	940	245	310	116	12	.....
3	.....	.....	.....	940	245	275	116	8	.....
4	.....	.....	52	770	245	275	107	8	.....
5	.....	.....	67	940	260	245	102	6	.....
6	.....	.....	.....	700	245	245	98	5	.....
7	.....	.....	.....	585	245	245	107	4	.....
8	.....	.....	.....	585	245	218	98	4	.....
9	.....	.....	.....	585	245	218	98	3	.....
10	.....	4	.....	585	245	195	98	2	.....
11	.....	.....	.....	585	245	195	81	2	.....
12	.....	.....	7,950	535	218	195	81	2	.....
13	.....	67	6,240	485	218	175	81	2	.....
14	.....	67	1,020	485	218	175	81	1	.....
15	.....	67	1,200	485	218	175	81	1	.....
16	.....	67	1,590	435	218	165	81	.....	.....
17	.....	52	2,190	390	218	155	73	.....	.....
18	.....	13	1,590	390	195	155	73	.....	.....
19	430	10	1,590	390	195	155	73	.....	.....
20	102	10	1,320	390	195	155	73	.....	.....
21	67	7	970	350	195	145	73	.....	.....
22	23	23	770	310	195	145	65	.....	.....
23	10	10	770	310	195	135	65	.....	.....
24	4	7	2,110	310	175	135	50	.....	.....
25	2	7	7,080	310	175	135	50	.....	.....
26	.....	5	9,350	275	245	135	44	.....	.....
27	.....	.....	6,080	275	218	145	44	.....	.....
28	.....	.....	4,250	350	1,030	145	37	.....	.....
29	.....	.....	4,140	275	535	135	31	.....	.....
30	.....	.....	1,340	245	370	126	25	.....	.....
31	.....	.....	1,340	.....	350	.....	21	.....	.....

NOTE.—River dry on all days for which discharge is not given.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1				225	660	660	1,470	415	212	51	32	6
2				190	660	610	1,470	374	212	77	32	3
3				130	890	610	1,470	374	212	108	24	3
4				130	890	610	1,380	336	212	125	24	3
5				112	960	6,730	1,290	336	212	108	24	1
6				225	960	4,200	1,210	336	212	108	24	1
7				380	820	3,000	1,130	302	212	108	24	1
8				1,400	760	2,800	1,130	302	212	108	17	
9				1,760	710	2,800	1,050	302	199	92	17	
10				4,595	710	2,800	1,050	270	199	77	17	
11				2,060	660	2,600	1,050	270	199	77	17	
12				1,760	660	1,630	1,050	270	199	77	17	
13				1,400	610	1,510	1,050	255	186	63	11	
14				820	610	1,350	1,050	255	186	51	11	
15				890	610	1,200	1,050	255	186	51	6	
16				820	610	925	890	255	186	51	6	
17				820	1,110	820	890	255	174	51	6	
18				890	1,110	760	810	255	174	41	6	
19				820	890	710	730	240	174	41	6	
20				710	660	760	655	240	163	41	6	
21				610	660	2,140	655	240	163	41	3	
22				560	1,110	1,630	585	240	153	32	3	
23				560	890	1,070	585	240	153	32	3	
24				510	710	1,510	585	240	143	32	3	
25				610	710	1,760	585	240	143	32	3	
26				660	660	2,500	515	240	143	32	3	
27				610	660	1,740	415	240	134	32	3	
28				610	660	1,740	460	226	134	32	3	
29				710		1,740	460	226	125	32	3	
30				820		1,740	460	226	125	32	3	
31				760		1,560		226		32	6	
1907–8.												
1		3			174	149	126	71	6		23	
2		1			174	126	126	87	4			
3					202	126	149	87	4			
4					690	105	126	71	4			
5					401	105	105	71	4			
6					309	105	105	71	4			
7					202	105	87	71	4			
8					174	87	71	56	4			
9					174	87	71	56	2			
10					270	71	56	105	2			
11					202	56	56	56				
12					202	56	71	56				
13					174	87	71	56				
14					174	87	71	56				
15				6	126	87	87	43				
16	3			2	126	174	87	43				
17	6				126	202	71	43				
18	3				126	202	71	32				
19	1				126	202	71	32				
20	1				126	202	56	32				
21					126	202	56	32				
22					126	174	56	10				
23					126	126	71	10				
24	1			765	105	126	71	10				
25	3			1,165	105	174	71	10				
26	1			560	105	174	56	10				
27	11			309	105	149	71	10				
28	24			234	105	126	71	6				
29	17			270	149	126	71	6				
30	6			202		126	71	6				
31	3			174		126		10		56		

NOTE.—River dry on all days for which discharge is not given.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909.												
1				0	242	242	538	242	114	43		
2					242	242	620	242	112	41		
3					242	242	620	242	108	38		
4					242	242	710	242	106	36		
5					242	242	620	242	104	34		
6					242	242	538	205	102	32		
7					7,030	242	538	205	100	30		
8					3,120	242	462	205	97	27		
9					1,015	242	462	205	95	25		
10					710	242	462	205	92	23		
11					1,140	205	393	205	90	21		
12					2,090	205	393	205	87	19		
13				2	2,690	205	393	226	85	17		
14				23	1,910	205	333	225	83	15		
15				23	1,140	205	333	216	80	13		
16				10	905	205	393	215	78	11		
17				4	710	172	393	213	75	9		
18				2	620	172	333	210	73	7		
19				2	538	172	333	206	71	5		
20				2	462	142	333	242	68	3		
21				2,690	393	1,430	333	242	65	2		
22				4,050	333	710	333	242	63	2		
23				1,580	333	462	333	224	61	1.5		
24				538	283	393	333	216	59	1.5		
25				393	283	333	283	208	56	1.0		
26				283	283	538	283	200	54	1.0		
27				393	283	710	283	193	52	.5		
28				333	283	620	283	186	50	.5		
29				283		620	283	178	48	.0		
30				242		538	242	170	45	.0		
31				242		538		162		0		
1909–10.												
1				12,400	253	78	96	30				
2				3,090	200	78	96	30				
3				1,850	200	78	96	30				
4				1,440	200	78	96	30				
5				1,070	200	78	78	30				
6				1,070	153	78	78	22				
7				1,070	153	78	78	22				
8				733	153	78	78	22				
9			1,430	733	153	78	78	16				
10			462	634	153	78	78	16				
11			142	634	153	78	78	16				
12			93	634	119	63	78	7				
13			44	541	119	63	78	7				
14			44	541	119	63	63	7				
15			33	541	119	63	63	7				
16			33	541	119	63	63	4.5				
17			24	455	119	63	63	4.5				
18			24	455	119	78	63	4.5				
19			24	455	119	63	63	4.5				
20			24	455	119	63	63	4.5				
21			74	455	96	63	50	4.5				
22			44	379	96	176	50	4.5				
23			58	379	96	96	50	2.5				
24			44	379	96	96	50	2.5				
25			33	312	96	78	50	2.5				
26			33	312	96	78	50	2.5				
27		10	33	312	78	78	50	2.5				
28			24	312	78	119	50	2.5				
29			24	253		119	39	1				
30			24	253		119	30	1				
31			5,610	200		119		.5				

NOTE.—River dry on all days for which discharge is not given.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Sept.
1911.								
1	.....	1,540	235	580	246	128	28	.....
2	.....	900	235	680	245	98	28	.....
3	.....	1,140	585	690	243	98	28	.....
4	.....	3,180	2,470	590	241	98	28	.....
5	.....	2,140	1,830	500	239	76	28	.....
6	.....	1,400	1,540	510	238	76	28	.....
7	.....	1,020	1,540	520	236	76	19	.....
8	.....	785	3,560	430	234	76	19	.....
9	100	900	7,660	440	232	76	19	.....
10	1,070	680	9,100	360	231	57	19	.....
11	200	680	4,500	370	229	57	19	.....
12	50	680	3,430	375	227	57	19	.....
13	16	680	2,300	380	175	57	19	.....
14	2	680	2,060	390	360	57	12	.....
15	1,440	585	1,820	310	218	41	12	.....
16	455	500	1,780	320	217	41	12	.....
17	153	420	1,570	325	217	41	12	.....
18	78	350	1,520	350	217	41	12	.....
19	50	290	1,470	375	168	41	12	.....
20	39	235	1,270	325	168	41	12	.....
21	30	235	1,200	350	280	41	12	.....
22	22	185	1,020	345	168	41	12	.....
23	16	185	963	345	168	41	12	.....
24	11	140	840	340	128	28	7	.....
25	1,070	140	850	340	128	28	7	.....
26	541	140	730	335	128	28	3	.....
27	312	235	740	335	128	28	3	.....
28	253	235	640	330	128	28	1	.....
29	5,190	.....	650	250	128	28	1	50
30	1,680	.....	560	248	128	28	1	28
31	4,150	.....	570	.....	128	.....	1	.....

NOTE.—Daily discharge for 1910–11 determined from fairly well defined rating curves applicable as follows: Jan. 1, 1910, to Jan. 29, 1911; Jan. 30 to Mar. 10, 1911, and May 16 to Dec. 31, 1911; Mar. 11 to May 15, 1911, determined by the indirect method for shifting control. Discharge estimated Sept. 29, 1911, Jan. 14, 1912, and Mar. 4, 1912. Mar. 5 to Apr. 20, 1912, determined by the indirect method for shifting control. Apr. 21 to June 13, 1912, fairly well defined. No flow Oct. 1 to Jan. 8 and Aug. 1 to Sept. 28.

Day.	Oct.	Jan.	Mar.	Apr.	May.	June.	Day.	Oct.	Jan.	Mar.	Apr.	May.	June.
1911–12.							1911–12.						
1	7	.....	.....	45	217	41	16	.....	.....	320	320	98	.....
2	.....	.....	.....	45	217	41	17	.....	.....	260	320	76	.....
3	.....	.....	.....	45	168	28	18	.....	.....	205	315	76	.....
4	.....	.....	.....	45	168	28	19	.....	.....	205	310	76	.....
5	.....	.....	290	45	128	28	20	.....	.....	165	440	76	.....
6	.....	.....	1,170	45	128	28	21	.....	.....	98	355	76	.....
7	.....	.....	310	40	128	19	22	.....	.....	95	355	57	.....
8	.....	.....	90	40	217	19	23	.....	.....	70	355	57	.....
9	.....	.....	50	170	168	19	24	.....	.....	70	355	57	.....
10	.....	.....	2,950	170	128	12	25	.....	.....	70	355	57	.....
11	.....	.....	750	650	128	12	26	.....	.....	65	355	57	.....
12	.....	.....	360	415	128	12	27	.....	.....	65	280	41	.....
13	.....	.....	660	245	128	3	28	.....	.....	65	280	41	.....
14	.....	.....	380	320	98	.....	29	.....	.....	65	217	41	.....
15	.....	.....	390	320	98	.....	30	.....	.....	60	217	41	.....
							31	.....	.....	45	.....	41	.....

NOTE.—Daily discharge determined from fairly well defined rating curves applicable as follows: May 16 to Dec. 31, 1911; Apr. 21 to June 13, 1912. River dry on days for which no discharge is given. Mar. 5 to Apr. 20, 1912, determined by the indirect method for shifting control.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1913.						1913.					
1			175	82	26	16	80		70	35	
2			130	82	23	17	55		70	30	
3			130	70	18	18	35		70	40	
4			130	62	18	19	25		70	30	
5			130	62	18	20	3		62	30	
6			130	53	18	21			62	30	
7			130	53	18	22			62	30	
8		210	130	53	18	23			53	30	
9		75	130	46	18	24		1,210	53	30	
10		54	112	40	18	25		1,880	53	30	
11		25	130	40	14	26		750	40	32	
12		14	95	40	10	27		425	35	35	
13		8	95	40	10	28		230	30	35	
14			82	40	6	29			30	30	
15			70	40	3	30			152	30	
						31			95		

NOTE.—Daily discharge for period Feb. 24 to May 15, 1913, determined from a fairly well defined rating curve. Discharge Jan. 16 to 21 and Feb. 8 to 14 estimated from discharge measurements and record for San Gabriel River at headworks near Azusa. No flow on days for which discharge is not given.

Day.	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1913–14.								
1			685	2,100	340	269	135	34
2			685	1,910	340	261	132	30
3			625	1,730	302	253	129	27
4			625	1,560	302	245	125	24
5			625	1,480	340	237	121	21
6			598	1,480	302	229	117	21
7			598	1,400	302	221	113	21
8			545	1,250	302	219	109	15
9			390	840	302	216	105	12
10			285	730	302	213	101	12
11			270	620	302	210	98	10
12			240	620	302	208	83	10
13			240	520	302	205	70	10
14			240	472	294	202	70	10
15		230	225	425	293	200	70	10
16		850	215	425	292	197	64	8
17		300	255	425	291	194	64	8
18		5,050	1,720	472	290	190	64	6
19	40	1,640	4,490	425	289	186	64	6
20	4	750	11,800	425	287	182	64	6
21		470	8,480	425	286	178	64	6
22		425	6,620	425	285	174	58	5
23		380	4,710	425	284	170	58	4
24		380	4,180	382	283	166	58	3
25		3,160	2,950	382	282	163	52	2
26		9,150	2,840	382	281	159	52	2
27		2,460	2,500	382	280	155	52	2
28		1,880	2,200	340	279	151	52	2
29		985		340	278	147	52	1
30		820		425	277	143	37	1
31		820		382		139		1

NOTE.—Channel dry Oct. 1 to Nov. 18, Nov. 21 to Jan. 14, and Aug. 1 to Sept. 30; discharge Jan. 26 estimated. Discharge Apr. 14 to June 10 determined by indirect method for shifting control; discharge July 1–4 interpolated.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1914–15.								
1			65	400	230	270	178	18
2			1,000	355	230	270	162	54
3			510	315	250	270	147	32
4			275	275	250	270	132	27
5			150	275	250	270	119	27
6			120	275	230	270	106	22
7			90	258	230	270	106	18
8			65	240	212	270	106	14
9			1,000	240	212	270	94	11
10			1,110	240	212	270	94	8
11			1,000	225	194	270	82	5
12			900	210	194	270	82	5
13			730	256	212	270	72	5
14			580	256	212	270	72	5
15			510	256	194	250	72	5
16			450	256	178	250	54	3
17	50		450	274	178	270	48	3
18	25		425	274	178	250	48	3
19	20		378	256	178	230	48	3
20	15		450	256	178	230	48	3
21	25		378	259	194	230	48	3
22	15		335	262	178	212	48	3
23	23		295	262	178	212	42	3
24	15		400	262	178	212	40	3
25	15		378	262	162	212	37	1.5
26	10		355	262	162	212	37	1.5
27	4		315	262	162	212	32	
28	2		275	290	194	194	22	
29		1,350		270	230	194	18	
30		240		250	230	194	18	
31		120		250		178		

NOTE.—Discharge determined from rating curves as follows: Jan. 29 to Mar. 12, fairly well defined above 200 second-feet; Mar. 28 to June 15, well defined; and June 16 to July 26, well defined. Discharge Dec. 17–28, estimated from current meter measurements and observer's notes; Mar. 13–27, estimated from measurements. No flow Oct. 1 to Dec. 16, Dec. 29 to Jan. 28, and July 27 to Sept. 30.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1916.							1916.						
1	0	1,220	525	384	172	44	16	99	495	412	246	63	4.4
2	19	1,020	495	374	165	42	17	17,100	495	385	246	63	4.1
3	79	930	495	365	169	28	18	22,300	468	385	240	63	3.2
4	37	845	495	356	160	16	19	3,900	440	385	234	74	2.6
5	99	765	620	346	96	14	20	2,380	440	765	222	69	.8
6	62	690	555	331	96	11	21	1,570	440	655	216	63	.6
7	37	690	555	299	93	10	22	1,330	412	555	214	57	.6
8	22	655	525	285	89	9.0	23	1,170	385	555	211	54	.6
9	400	620	495	285	86	7.5	24	848	360	525	202	57	.4
10	740	588	495	278	82	7.5	25	760	335	495	200	57	.0
11	400	555	495	285	79	7.0	26	620	495	290	151	53	.0
12	110	555	468	278	109	7.0	27	7,860	930	440	130	52	.0
13	79	555	468	272	107	6.0	28	4,240	555	440	126	49	.0
14	55	555	440	259	72	5.5	29	2,160	555	412	122	45	.0
15	135	495	440	252	66	5.0	30	2,000		402	174	44	.0
							31	1,710		393		44	.0

NOTE.—No flow Oct. 1 to Jan. 1, and June 25 to Sept. 30.

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Daily discharge, in second-feet, of San Gabriel River near Azusa, Calif., for 1894–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1916–17.								
1				17	45	290	87	41
2	320			17	43	252	77	39
3	80			48	40	218	71	37
4	30			37	41	200	66	37
5	25			32	41	176	63	31
6	55			28	40	165	66	30
7	50			26	39	147	58	30
8	35			27	38	135	53	31
9	25			26	37	165	63	31
10	35			27	34	165	48	31
11	40			26	31	135	44	30
12	30			28	29	115	43	27
13	30			29	26	115	41	24
14	25			43	25	110	39	24
15	15			50	20	110	104	22
16	10			45	19	104	107	20
17	10			57	58	100	63	19
18	8			145	63	100	48	35
19	6			215	73	100	39	31
20	3			190	77	100	36	24
21	3			140	182	100	36	20
22	2			120	590	96	37	18
23	2			100	355	94	39	19
24	1		3,900	80	270	92	41	22
25	1		310	67	730	90	44	20
26	1		165	62	490	90	50	17
27			90	57	380	90	53	15
28			56	55	332	90	50	4
29			42	52		100	48	
30			24	49		110	43	
31			20	48		110		

Day.	Feb.	Mar.	Apr.	May.	June.	Day.	Feb.	Mar.	Apr.	May.	June.
1918.						1918.					
1		100	410	76	0.7	16		1,050	164	42	
2		64	388	72	.7	17		850	142	36	
3		52	367	70	.6	18		720	132	20	
4		44	348	69	.4	19		790	124	18	
5		42	328	75	.2	20		690	124	15	
6		184	310	75	1.1	21	200	630	115	13	
7		4,120	310	66	1.4	22	1,580	500	115	11	
8		2,030	292	58	1.1	23	400	530	115	4.2	
9		870	292	55	1.1	24	184	505	114	2.4	
10		1,810	292	53	.9	25	241	480	112	2.4	
11		4,940	276	51	.4	26	292	455	112	2.1	
12		4,100	259	49		27	207	432	103	1.6	
13		3,520	259	47		28	148	410	99	2.8	
14		1,950	229	44		29		388	89	4.9	
15		1,250	175	43		30		348	78	3.7	
						31		348		1.0	

NOTE.—River dry on all days for which discharge is not given.

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Monthly discharge of San Gabriel River near Azusa, Calif., for 1896–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet.)
	Maximum.	Minimum.	Mean.	
1896.				
January	25	0.0	10.6	652
February	27.5	3.1	11.7	673
March	134	2.3	74.6	4,590
April	46	.0	11.1	660
The period				6,580
1896–97.				
October	177	.0	12	738
November	16	.0	3	179
December	12	.0	2	123
January	130	5	40	2,484
February	1,710	46	329	18,272
March	1,765	275	434	26,686
April	345	141	259	15,417
May	141	28	82	5,042
June	28	.2	5	274
The year	1,765	.0		69,200
1897–98.				
October	1,600	.0	72	4,458
November	15	.4	8	475
December	5	3.0	4	221
January	31	0	14	863
February	41	0	11	622
March	1	0	.03	2
The year	1,600	.0	9.46	6,920
1898–99.				
January	16	0	1.2	123
The year	16	0	.1	123
1899–1900.				
October	13	0	.42	26
January	49	0	2	123
May	38	0	2	123
The year	49	0	.37	272
1900–1901.				
November	5,168	0	172	10,235
January	1,450	0	111	6,825
February	2,600	70	630	34,988
March	370	80	158	9,715
April	75	13	43	2,559
May	200	18	55	3,382
June	27	0	0	417
The year	5,168	0		68,100
1901–2.				
October	70	0	3	184
February	57	0	3	167
March	318	4	38	2,337
April	37	0	7	417
The year	318	0	4.25	3,100
1902–3.				
November	18	.0	.60	35.7
January	2,936	.0	118	7,260
February	134	.0	32.7	1,820
March	1,348	.0	186	11,400
April	5,844	205	741	44,100
May	286	55	148	9,100
June	55	.0	20.7	1,230
The year	5,844	.0	104	74,900
1903–4.				
February	438	.0	17.0	978
March	1,068	.0	60.2	3,700
April	54	0.0	24.3	1,450
May	37	.0	9.69	596
The year	1,068	.0	9.26	6,720
1904–5.				
January	41	.0	1.32	81.2
February	2,940	.0	398	22,100
March	11,058	70	1,150	70,700
April	394	126	249	14,800
May	492	113	199	12,200
June	102	28	61.9	3,680
July	37	.0	8.79	540
The year	11,058	.0	172	124,000
1905–6.				
January	430	0	20.6	1,270
February	67	0	14.9	828
March	9,350	0	2,030	125,000
April	1,030	245	508	30,200
May	1,030	175	267	16,400
June	310	126	188	11,200
July	116	21	75.6	4,650
August	17	0	2.48	152
The year	9,350	0	262	190,000
1906–7.				
January	4,595	12	873	53,700
February	1,110	610	772	42,900
March	6,730	610	1,810	111,000
April	1,470	415	906	53,900
May	415	226	274	16,800
June	212	125	178	10,600
July	125	32	60.2	3,700
August	32	3	11.7	719
September	6	0	.6	35.7
The year	6,730	0	406	293,000
1907–8.				
October	24	.0	2.58	159
November	3	.0	.13	7.7
January	1,165	0	119	7,320
February	690	105	184	10,600
March	202	56	131	8,060
April	149	56	80.0	4,760
May	105	6	42.4	2,610
June	6	0	1.27	75.6
July	56	0	1.81	111
August	23	0	.74	45.5
The year	1,165	0	46.4	33,700
1908–9.				
January	4,050	0	358	22,000
February	7,030	242	1,000	55,500
March	1,430	142	361	22,200
April	710	242	406	24,200
May	242	162	214	13,200
June	114	45	79.1	4,710
July	43	.0	14.8	910
The year	7,030	.0	197	143,000
1909–10.				
November	10	0	.33	19.6
December	5,610	0	270	16,600
January	12,400	200	1,060	65,200
February	253	78	135	7,500
March	176	63	83.3	5,120
April	96	30	66.5	3,960
May	30	.5	11.0	676
The year	12,400	.0	137	99,100

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Monthly discharge of San Gabriel River near Azusa, Calif., for 1896–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1910–11.				
January	5,190	0	546	33,600
February	3,180	140	724	40,200
March	9,100	235	1,910	117,000
April	690	248	401	23,900
May	360	128	201	12,400
June	128	28	55.1	3,280
July	28	1	14.4	885
September	50	0	2.6	155
The year	9,100	0	321	231,000
1911–12.				
October	7	0	.2	12
March	2,950	0	301	18,500
April	650	40	249	14,800
May	217	41	104	6,400
June	41	0	9.7	577
The year	2,950	0	55.5	40,300
1912–13.				
January	80	0	6.4	394
February	1,880	0	174	9,660
March	175	30	90.5	5,560
April	82	30	42.7	2,540
May	26	0	7.6	467
The year	1,880	0	25.8	18,600
1913–14.				
November	40	0	1.5	89
January	9,150	0	960	59,000
February	11,800	215	2,140	119,000
March	2,100	340	761	46,800
April	340	277	296	17,600
May	269	139	196	12,100
June	135	37	81.1	4,830
July	34	1	10.6	652
The year	11,800	0	359	260,000
1914–15.				
December	50	0	7.1	437
January	1,350	0	55.2	3,390
February	1,110	65	464	25,800
March	400	210	267	16,400
April	250	162	202	12,000
May	270	178	243	14,900
June	178	18	73.7	4,390
July	54	0	9.23	568
The year	1,350	0	108	77,900
1915–16.				
January	22,300	0	2,330	143,000
February	1,220	335	605	34,800
March	765	290	486	29,900
April	384	122	253	15,100
May	172	44	82.2	5,050
June	44	.0	7.89	469
The year	22,300	.0	315	228,000
1916–17.				
October	320	0	27.2	1,670
December	3,900	0	149	9,160
January	215	17	62.7	3,860
February	730	19	148	8,220
March	290	90	131	8,050
April	107	36	55.2	3,280
May	41	0	23.5	1,440
The year	3,900	0	49.3	35,700
1917–18.				
February	1,580	.0	116	6,440
March	4,940	42	1,000	67,600
April	410	78	209	12,400
May	76	1.0	34.9	2,150
June	1.4	.0	.29	17.2
The year	4,940	.0	123	88,600

NOTE.—No flow in months for which record is not given. Records therefore represent full years.

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Combined daily discharge, in second-feet, of San Gabriel River and canals near Azusa, Calif., for 1905–6, 1909–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	30	29	50	37	50	75	1,110	321	364	192	93	54
2	29	29	47	37	50	68	992	321	362	192	88	55
3	28	29	45	37	49	65	998	321	329	192	84	53
4	28	29	44	37	50	72	846	321	340	183	84	52
5	28	29	44	37	63	87	844	336	321	183	82	52
6	28	32	42	37	63	74	776	321	321	174	81	50
7	28	44	42	37	56	70	663	321	321	183	80	50
8	28	95	41	37	47	70	663	321	294	174	80	49
9	27	53	39	37	47	71	662	321	294	174	79	49
10	27	42	37	36	61	64	661	321	271	174	78	49
11	27	38	37	36	72	56	650	321	271	157	78	49
12	27	36	37	37	69	8,020	609	294	271	157	78	49
13	28	36	38	37	82	6,310	563	294	251	157	78	50
14	29	34	39	49	82	1,090	561	294	251	157	77	50
15	29	34	39	52	82	1,280	561	294	251	157	77	52
16	29	45	39	41	82	1,670	511	294	241	157	76	51
17	30	53	39	41	92	2,270	462	294	231	149	76	50
18	30	43	39	42	87	1,670	466	271	231	149	72	46
19	30	40	38	430	84	1,670	466	271	231	149	68	45
20	29	42	46	178	84	1,400	466	271	231	149	68	45
21	29	41	42	143	82	1,040	426	271	221	149	68	44
22	31	39	39	99	97	841	386	271	221	141	68	44
23	32	38	38	86	84	835	386	271	211	141	68	43
24	31	37	37	80	81	2,190	386	251	211	126	66	43
25	30	37	38	68	77	7,160	386	251	231	126	64	43
26	29	37	38	66	75	9,430	351	321	211	120	60	43
27	29	97	38	61	73	6,160	351	294	221	120	60	43
28	28	87	38	57	76	4,330	426	1,110	221	113	59	43
29	29	62	37	58	.....	4,220	351	588	211	107	59	42
30	28	53	37	54	.....	1,420	321	418	202	101	58	42
31	28	.....	38	52	.....	1,420	.....	410	.....	97	57	.....
1909.												
1	.....	.....	.....	39	308	309	605	309	154	109	59	52
2	.....	.....	.....	39	309	309	687	309	152	109	59	48
3	.....	.....	.....	39	309	309	687	309	173	106	58	45
4	.....	.....	.....	39	309	309	710	309	172	105	56	45
5	.....	.....	.....	39	309	309	687	309	170	102	56	43
6	.....	.....	.....	39	309	309	605	272	168	100	55	42
7	.....	.....	.....	39	7,100	309	605	272	166	99	55	43
8	.....	.....	.....	39	3,190	309	529	272	163	96	55	42
9	.....	.....	.....	62	1,080	309	529	272	161	94	53	40
10	.....	.....	.....	82	777	309	529	272	158	92	52	40
11	.....	.....	.....	58	1,210	272	460	267	156	89	51	38
12	.....	.....	.....	58	2,160	272	460	267	153	87	50	39
13	.....	.....	.....	78	2,760	272	460	260	151	85	49	38
14	.....	.....	.....	92	1,980	272	400	255	149	83	48	37
15	.....	.....	.....	85	1,210	272	400	255	146	81	48	37
16	.....	.....	.....	72	971	272	460	255	144	79	48	36
17	.....	.....	.....	66	777	239	460	252	141	77	49	36
18	.....	.....	.....	64	687	239	400	250	139	75	56	36
19	.....	.....	.....	61	605	239	400	246	137	73	56	35
20	.....	.....	.....	60	529	209	400	242	134	70	53	35
21	.....	.....	.....	2,760	460	1,500	400	242	132	69	49	35
22	.....	.....	.....	4,080	400	777	400	242	130	68	48	35
23	.....	.....	.....	1,640	400	529	400	224	129	68	47	35
24	.....	.....	.....	600	350	460	400	216	126	68	45	36
25	.....	.....	.....	457	350	400	350	208	123	68	44	37
26	.....	.....	.....	345	350	605	350	200	123	68	43	38
27	.....	.....	.....	455	350	777	350	193	121	68	43	38
28	.....	.....	.....	395	350	687	350	186	118	68	43	37
29	.....	.....	.....	345	.....	687	350	178	117	64	42	36
30	.....	.....	.....	304	.....	605	309	172	111	62	52	37
31	.....	.....	.....	304	.....	605	.....	162	.....	61	51	.....

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Combined daily discharge, in second-feet, of San Gabriel River and canals near Azusa, Calif., for 1905–6, 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	36	36	54	12,500	322	151	169	102	67	49	33	24
2	43	35	53	3,140	272	151	169	102	68	50	32	24
3	50	34	54	1,900	274	151	170	102	68	49	31	24
4	46	35	53	1,510	274	151	169	102	68	48	31	24
5	42	35	57	1,140	274	151	151	102	68	47	31	25
6	41	35	68	1,140	227	151	151	94	67	45	30	25
7	41	36	62	1,140	227	151	151	95	67	45	29	24
8	39	36	66	804	226	151	150	94	66	43	29	24
9	37	46	1,500	805	226	151	151	88	63	42	29	24
10	35	51	536	706	226	151	151	88	63	42	29	23
11	35	47	216	706	227	151	150	88	61	40	29	23
12	35	46	166	706	192	136	150	79	60	41	29	23
13	35	43	118	614	193	136	150	79	61	40	29	23
14	35	53	118	613	184	136	135	79	62	40	29	24
15	35	66	107	613	185	136	135	79	66	39	29	24
16	37	55	107	614	190	136	135	76	66	39	28	24
17	39	52	98	527	192	136	135	76	64	37	28	24
18	39	50	98	527	192	151	135	76	58	38	26	23
19	37	49	98	520	192	136	135	76	56	38	25	22
20	37	47	98	477	192	136	135	76	54	36	26	23
21	37	47	148	525	170	136	122	75	54	37	26	23
22	36	47	118	452	169	249	122	74	55	37	26	21
23	35	46	132	454	169	169	122	73	56	36	26	21
24	34	45	118	449	169	169	121	73	54	35	26	21
25	34	45	107	380	169	151	122	72	52	36	25	22
26	34	62	107	386	169	151	121	72	50	34	25	22
27	34	92	107	381	151	151	122	72	49	35	26	22
28	35	65	98	381	151	192	122	71	50	35	25	22
29	36	59	98	322	.....	192	111	70	50	35	25	22
30	37	56	98	322	.....	192	102	69	50	34	25	22
31	38	.....	5,660	269	.....	192	.....	68	.....	35	25	.....
1910–11.												
1	23	26	33	33	1,610	310	650	310	200	99	69	45
2	22	26	32	33	968	310	753	316	170	72	69	46
3	23	29	31	33	1,210	660	763	314	170	99	69	47
4	23	31	32	33	3,250	2,540	664	312	169	99	69	46
5	24	29	32	33	2,210	1,900	574	310	147	100	68	48
6	23	28	32	32	1,470	1,610	584	309	146	100	68	49
7	22	29	32	32	1,090	1,610	594	307	146	91	68	48
8	23	29	32	32	856	3,630	504	305	148	91	66	46
9	23	29	31	137	972	7,720	514	303	147	91	65	47
10	23	28	32	1,110	753	9,160	434	302	129	91	65	46
11	25	27	32	261	752	4,560	444	299	129	91	64	44
12	26	27	32	112	752	3,490	449	297	128	91	61	43
13	26	39	32	80	752	2,360	454	245	128	91	60	44
14	26	36	32	68	752	2,120	464	400	129	83	58	43
15	32	36	32	1,510	657	1,880	384	288	112	84	59	43
16	32	35	32	525	572	1,840	394	288	112	84	58	41
17	31	34	32	222	495	1,630	399	288	113	84	56	41
18	30	34	33	152	425	1,590	424	289	113	84	56	41
19	27	34	34	125	365	1,490	449	240	113	84	54	40
20	26	32	36	114	310	1,340	398	240	113	84	54	40
21	26	32	35	104	308	1,270	423	334	113	84	54	41
22	26	32	33	96	260	1,090	418	239	113	84	54	41
23	25	32	33	90	260	1,030	418	240	112	84	52	42
24	24	31	35	85	215	909	412	200	99	79	52	42
25	24	31	35	1,140	215	919	412	200	99	79	51	42
26	25	34	34	615	215	802	407	200	99	75	52	42
27	25	34	34	386	310	811	406	200	99	75	52	42
28	24	33	33	327	310	711	402	200	99	71	51	42
29	24	33	33	5,260	.....	721	321	200	99	71	50	113
30	27	33	32	1,750	.....	630	320	200	99	71	49	94
31	27	.....	33	4,220	.....	638	.....	200	.....	71	46	.....

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Combined daily discharge, in second-feet, of San Gabriel River and canals near Azusa, Calif., for 1905–6, 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	74	49	44	48	42	40	120	271	118	61	39	28
2	70	49	43	53	42	42	120	275	118	61	40	28
3	66	45	43	49	41	39	120	227	105	64	39	28
4	60	45	44	48	41	56	120	237	103	69	37	30
5	56	46	45	49	41	362	120	203	105	62	36	31
6	55	47	50	49	40	1,240	120	205	105	58	34	30
7	52	47	56	48	40	381	115	191	96	57	34	28
8	51	46	49	48	40	164	115	274	96	56	33	29
9	52	47	47	47	41	124	244	228	96	54	32	29
10	51	49	46	47	40	3,020	244	204	89	53	32	28
11	51	52	46	48	40	825	723	204	89	52	32	27
12	50	51	45	48	40	435	490	204	89	50	32	28
13	48	50	45	47	40	735	320	204	80	49	32	26
14	47	50	46	0	40	455	395	175	77	49	32	25
15	45	49	46	45	38	465	395	175	77	48	31	25
16	44	50	46	45	38	395	395	175	77	48	32	26
17	45	47	48	45	39	335	395	153	77	50	32	25
18	45	46	48	45	38	280	389	153	77	50	34	24
19	45	47	47	45	38	280	384	153	76	48	33	25
20	44	47	47	45	36	240	458	153	75	46	32	24
21	44	47	47	44	36	173	355	153	72	44	30	24
22	44	47	45	44	38	170	355	134	72	43	30	23
23	44	47	46	42	37	145	355	134	73	44	29	23
24	44	46	45	42	36	145	355	134	75	42	28	25
25	44	46	45	42	37	145	355	134	71	42	28	25
26	45	43	45	42	37	140	355	134	69	41	28	24
27	53	44	46	44	37	140	304	118	67	41	27	24
28	55	44	47	44	37	140	317	118	66	40	27	23
29	53	44	54	42	35	140	261	118	63	41	28	23
30	53	44	56	41	.....	135	268	118	63	41	28	23
31	51	.....	48	42	.....	120	.....	118	.....	41	28	.....

NOTE.—Jan. 14, 1912, no flow in canal and no record of flow past river gage, although probably there was some flow. Mar. 4, discharge of canal only. Probably there was some flow past river gage, but no record was given.

1912–13.												
1	24	29	31	29	40	252	159	103	59	39	23	20
2	25	27	30	28	40	207	159	100	59	38	22	21
3	32	28	30	28	40	207	147	95	57	35	20	21
4	37	28	30	28	40	207	139	95	60	35	18	17
5	39	28	30	27	39	207	139	95	62	34	17	16
6	35	28	29	25	40	207	130	95	58	31	17	16
7	34	28	28	25	56	207	130	95	56	31	16	16
8	34	27	28	28	283	207	130	95	54	29	16	17
9	33	28	28	30	148	207	123	95	55	28	17	16
10	32	31	28	32	127	189	117	95	54	27	19	15
11	30	35	28	32	98	207	117	91	53	25	17	15
12	30	32	27	32	87	172	117	87	51	25	17	15
13	30	30	26	32	81	172	117	87	48	26	17	14
14	29	31	26	32	72	159	117	83	46	25	17	14
15	29	30	27	51	70	147	117	79	46	26	17	14
16	28	30	27	148	68	147	112	76	44	24	17	13
17	28	30	29	123	64	147	107	75	44	23	17	13
18	27	30	29	104	64	147	117	74	42	22	17	13
19	27	30	28	93	64	147	107	74	40	22	16	13
20	26	30	29	63	61	139	107	73	39	24	15	13
21	26	28	28	51	59	139	107	73	37	28	16	13
22	26	28	28	47	68	139	107	72	34	27	16	13
23	28	29	29	45	59	130	107	70	35	25	18	14
24	27	28	30	43	1,290	130	107	68	36	24	16	16
25	26	28	30	42	1,960	130	107	67	38	24	17	15
26	26	28	29	42	827	117	109	66	42	26	16	14
27	30	28	29	42	502	112	112	66	57	29	17	14
28	32	27	29	42	307	107	112	70	61	26	16	14
29	32	27	29	42	.....	107	107	68	50	26	16	13
30	32	30	29	42	.....	182	107	64	42	25	20	13
31	30	.....	29	41	.....	172	.....	59	.....	24	20	.....

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Combined daily discharge, in second-feet, of San Gabriel River and canals near Azusa, Calif., for 1905–6, 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	13	17	36	44	685	2,100	340	339	215	114	80	51
2	14	20	35	45	725	1,910	340	329	212	110	80	53
3	14	18	34	44	677	1,730	342	321	209	107	70	50
4	15	19	33	45	677	1,560	382	313	205	104	65	50
5	17	19	33	44	677	1,480	420	317	201	101	65	48
6	17	18	33	42	650	1,480	370	309	197	101	64	48
7	16	18	33	41	650	1,400	368	301	193	101	64	48
8	15	17	32	40	601	1,250	368	299	189	95	63	47
9	15	17	31	40	450	882	370	296	185	92	63	48
10	16	17	32	40	345	800	370	293	181	92	63	47
11	16	17	32	39	330	693	370	290	178	90	62	46
12	15	22	31	38	300	682	370	288	163	90	59	46
13	15	69	31	38	300	588	370	285	150	90	59	47
14	15	64	31	38	307	541	362	282	150	90	59	47
15	15	46	31	290	280	495	361	280	150	90	59	48
16	15	37	32	910	267	495	368	277	144	88	57	46
17	15	33	31	360	282	495	359	274	144	88	57	44
18	14	32	31	5,110	1,750	490	358	270	144	86	57	45
19	14	116	31	1,700	4,540	425	357	266	144	86	57	45
20	13	80	32	810	11,800	425	355	262	144	86	57	45
21	14	66	32	530	8,480	425	354	258	144	86	57	45
22	15	56	36	485	6,620	425	353	254	138	85	57	45
23	14	48	45	440	4,710	425	352	250	138	84	54	44
24	14	44	42	440	4,180	382	351	246	138	83	53	43
25	14	42	41	3,190	2,950	382	350	243	132	82	52	42
26	14	41	46	9,150	2,840	382	349	239	132	82	51	41
27	14	40	41	2,460	2,500	382	348	235	132	82	49	42
28	14	39	40	1,880	2,200	340	348	231	132	82	49	42
29	16	38	39	985	.....	340	346	227	132	81	50	41
30	16	38	41	820	.....	425	345	223	117	81	50	41
31	16	.....	47	820	.....	382	.....	219	.....	81	50	.....
1914–15.												
1	43	46	56	66	145	480	320	360	268	138	90	61
2	44	46	58	66	1,080	435	320	360	272	164	90	58
3	50	43	51	66	590	395	340	360	267	126	90	60
4	51	41	50	70	355	355	340	360	252	137	84	58
5	50	41	51	70	230	355	340	360	239	137	76	56
6	49	40	55	68	200	355	320	360	226	132	76	55
7	50	40	52	65	170	338	320	360	226	128	69	57
8	49	40	51	64	145	320	302	360	226	124	68	58
9	49	41	49	65	1,080	320	302	360	214	121	68	56
10	47	44	54	64	1,190	320	302	360	214	118	66	56
11	45	45	67	63	1,080	305	284	360	202	115	64	56
12	46	44	66	62	980	290	284	360	202	115	62	56
13	43	43	63	61	810	336	302	360	192	115	64	58
14	43	42	58	60	660	336	302	360	192	115	63	60
15	41	42	56	61	590	336	284	340	192	115	62	59
16	40	42	55	60	530	336	268	340	174	113	62	56
17	42	41	125	59	530	354	268	360	168	113	60	55
18	42	39	95	59	505	354	268	340	168	113	58	52
19	43	38	90	59	458	336	268	320	168	113	56	50
20	43	38	83	59	530	336	268	320	168	113	56	51
21	47	38	95	57	458	339	284	320	168	113	55	50
22	48	39	85	59	415	342	268	302	168	109	53	48
23	47	39	93	59	375	342	268	302	162	109	53	48
24	44	39	85	58	480	352	268	302	160	103	53	49
25	43	39	85	70	458	352	252	302	157	98	52	55
26	42	39	80	70	435	352	252	302	157	98	52	57
27	41	39	74	67	395	352	252	283	152	90	55	56
28	40	39	72	70	355	380	264	284	142	90	66	54
29	42	41	70	1,430	.....	360	300	284	138	90	64	51
30	44	42	70	320	.....	340	300	284	138	90	62	50
31	46	.....	86	200	.....	340	.....	268	.....	90	60	.....

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Combined daily discharge, in second-feet, of San Gabriel River and canals near Azusa, Calif., for 1905–6, 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915-16.												
1	48	43	49	63	1,300	605	464	262	134	90	59	51
2	47	43	48	93	1,100	575	454	255	132	90	58	48
3	48	43	48	159	1,010	575	445	259	118	90	61	50
4	47	42	69	117	925	575	436	250	106	90	58	49
5	46	44	67	179	845	700	426	186	104	90	62	49
6	45	54	60	142	770	635	411	186	101	90	61	49
7	45	60	58	117	770	635	379	183	100	84	59	50
8	45	56	58	102	735	605	365	179	99	81	56	48
9	44	57	55	480	700	575	365	176	98	79	62	48
10	45	61	56	820	668	575	358	172	98	79	62	47
11	46	57	55	480	635	575	365	169	97	80	61	47
12	47	58	56	190	635	548	358	154	97	80	60	45
13	47	54	55	159	635	548	352	152	96	80	58	45
14	47	52	72	135	635	520	339	162	96	80	57	44
15	48	52	76	215	575	520	332	156	95	80	60	42
16	48	52	65	179	575	492	326	153	94	80	59	43
17	46	51	62	17,100	575	465	326	153	94	80	61	43
18	46	50	61	22,300	548	465	320	153	93	79	61	45
19	45	50	60	3,980	520	465	314	164	93	77	60	45
20	44	50	59	2,450	520	845	302	159	91	76	58	47
21	44	49	58	1,650	520	735	296	153	91	73	60	47
22	44	49	56	1,410	492	635	294	147	91	72	57	48
23	44	50	56	1,250	465	635	291	144	91	72	53	49
24	43	49	54	928	440	605	292	147	90	70	57	48
25	43	48	54	840	415	575	290	147	90	70	57	49
26	42	49	53	700	575	370	241	143	90	67	56	49
27	42	49	53	7,940	1,010	520	220	142	90	67	55	48
28	42	49	54	4,290	635	520	216	139	90	67	54	46
29	41	49	53	2,240	635	492	212	135	90	65	54	44
30	42	49	61	2,080	.....	482	264	134	90	61	52	54
31	43	.....	62	1,790	.....	473	.....	134	.....	62	52	.....
1916-17.												
1	82	73	66	107	135	380	197	161	116	60	50	29
2	410	72	67	107	133	342	192	159	115	59	48	27
3	170	72	76	138	130	308	196	157	114	59	44	27
4	120	72	79	127	131	290	191	157	114	58	45	28
5	115	77	73	122	131	266	188	151	113	57	44	27
6	145	75	71	118	130	255	191	150	112	57	43	27
7	140	75	70	110	129	237	181	150	112	56	40	27
8	125	73	70	111	128	225	178	151	110	55	39	27
9	115	72	70	110	127	255	183	151	108	54	38	25
10	125	71	68	111	124	255	173	151	106	52	38	24
11	130	70	67	110	121	225	169	150	104	51	37	24
12	120	71	66	112	119	205	168	147	100	51	37	24
13	120	70	65	113	116	205	166	144	97	50	37	24
14	115	68	64	127	115	200	164	144	92	50	36	24
15	105	68	63	137	110	200	189	142	89	48	34	24
16	100	68	63	135	109	194	192	140	81	46	34	24
17	100	68	65	147	148	190	188	129	79	45	33	24
18	98	67	65	235	153	190	173	145	77	45	33	24
19	96	68	65	305	163	190	164	141	75	43	32	23
20	93	68	65	280	167	190	161	134	73	42	32	24
21	93	67	65	230	272	190	161	130	71	44	32	24
22	92	66	65	210	680	186	162	128	70	42	31	24
23	92	66	62	190	445	184	164	129	69	42	34	27
24	91	66	3,990	170	360	182	166	132	69	43	32	27
25	86	67	400	157	820	180	170	130	68	44	32	27
26	81	67	255	152	580	180	170	127	68	42	30	27
27	76	66	180	147	470	180	173	125	66	44	30	24
28	78	67	138	145	422	180	170	122	63	76	29	26
29	77	67	129	142	.....	190	168	118	63	57	28	24
30	76	66	114	139	.....	200	163	117	61	57	27	24
31	74	.....	110	138	.....	200	.....	116	.....	51	27	.....

NOTE.—Tunnel diversion for 1916–17 included in above table.

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Combined daily discharge, in second-feet, of San Gabriel River and canals near Azusa, Calif., for 1905–6, 1909–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	24	24	32	32	35	190	410	203	129	83	52	42
2	24	24	32	32	34	154	388	197	128	81	52	41
3	23	24	32	32	34	142	382	195	126	76	49	39
4	23	24	34	32	33	134	368	194	122	78	46	40
5	22	26	34	32	32	132	348	177	119	74	48	39
6	22	37	33	31	32	274	330	194	117	73	48	35
7	22	40	33	31	34	4,210	332	185	111	72	50	37
8	22	36	32	31	33	2,120	317	177	107	71	49	36
9	22	34	32	32	32	960	317	174	107	70	47	36
10	22	33	32	31	32	1,900	332	175	105	69	48	35
11	22	32	32	30	32	5,030	321	173	104	70	47	34
12	24	32	32	31	31	4,190	319	171	102	69	47	34
13	27	32	33	33	31	3,610	299	175	102	68	46	34
14	28	32	33	33	32	2,040	311	172	98	68	48	38
15	29	32	33	33	32	1,340	275	175	98	65	50	39
16	31	32	32	33	32	1,140	261	174	98	65	53	41
17	32	32	32	33	32	940	239	175	97	62	51	40
18	31	32	32	33	61	810	257	159	96	61	49	37
19	27	29	32	32	46	880	249	140	95	60	47	37
20	28	29	32	32	64	780	256	140	94	58	47	38
21	27	29	32	32	290	720	228	138	93	57	46	35
22	26	30	32	32	1,670	590	234	139	92	57	44	38
23	25	31	32	32	490	620	234	136	88	57	42	38
24	24	32	33	32	274	595	233	138	89	57	42	38
25	24	32	33	38	331	570	231	140	88	58	40	37
26	23	32	33	38	382	545	231	141	87	58	39	36
27	24	32	33	36	297	522	222	141	84	55	41	36
28	26	32	33	35	238	500	226	139	82	53	40	35
29	27	32	32	35	.....	478	214	141	83	52	43	48
30	27	32	32	35	.....	438	203	137	81	51	41	43
31	26	.....	32	35	.....	438	.....	129	.....	50	41	.....

NOTE—Tunnel diversion included in above table.

NOTE.—See pages 407–417 for tables of daily discharge of Southern California Edison Co.'s canal near Azusa. There is no separate table for tunnel diversion, when it is reported, except for year 1917–18.

Combined monthly discharge of San Gabriel River and canals near Azusa, Calif., for 1894–1918,

[Drainage area, 222 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1894.						
May	50	27	32	0.14	0.16	1,968
June	27	17	23	.10	.11	1,369
July	17	9	12	.05	.06	738
August	27	10	14	.06	.07	861
September	23	13	15	.07	.08	893
1894–5.						
October	16	13	14	.06	.07	861
November 1–15	14	13	13	.06	.03	387
August 8–31	47	38	42	.19	.17	1,999
September	39	29	32	.14	.16	1,904
1895–6.						
October	32	27	29	.13	.15	1,783
November	50	29	40	.18	.20	2,380
December	45	37	42	.19	.22	2,582
January	51	26	37	.17	.20	2,275
February	61	36	41	.18	.19	2,358
March	169	37	111	.50	.58	6,825
April	91	40	54	.24	.27	3,213
May	40	29	36	.16	.18	2,214
June	27	13	19	.09	.10	1,131
July	15	9	12	.05	.06	738
August	36	9	14	.06	.07	861
September	19	11	13	.06	.07	774
The year	169	9	37.3	.168	2.29	27,100

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Combined monthly discharge of San Gabriel River and canals near Azusa, Calif., for 1894–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1896–7.						
October	188	10	24	0.11	0.13	1,476
November	40	15	19	.09	.10	1,131
December	37	17	22	.10	.12	1,353
January	147	25	57.9	.260	.29	3,617
February	1,713	64	344.8	1.553	1.58	19,146
March	1,765	294	465.6	2.097	2.42	28,623
April	370	201	294.4	1.325	1.48	17,519
May	196	94	145.0	.653	.75	8,851
June	91	54	67.8	.306	.34	4,033
July	52	27	38.1	.171	.20	2,343
August	34	22	26.4	.118	.14	1,613
September	23	18	20.7	.088	.10	1,226
The year	1,765	10	127	.572	7.65	90,900
1897–8.						
October	1,640	22	90.5	.403	.46	5,564
November	34	31	33.3	.141	.15	1,860
December	34	28	30.5	.137	.16	1,875
January	63	28	40	.18	.20	2,453
February	70	32	40	.18	.19	2,241
March	48	28	35	.16	.18	2,131
April	37	25.3	33	.15	.17	1,950
May	83	25.0	36	.16	.19	2,213
June	30	14.5	19	.09	.10	1,159
July	14	9.0	11	.05	.06	672
August	9	5.0	7	.03	.04	456
September	10	6.1	8	.04	.04	467
The year	1,640	5	31.9	.144	1.94	23,000
1898–9.						
October	10	7.5	9	.04	.05	533
November	11	8.0	10	.04	.05	580
December	18	11.7	14	.06	.07	832
January	33	15	23	.104	.12	1,414
February	28	20	22	.102	.11	1,244
March	40	18	26	.119	.14	1,623
April	28	16	21	.096	.11	1,262
May	17	12	14	.062	.07	842
June	22	5	10	.043	.05	565
July	4	3	4	.016	.02	221
August	6	4	5	.022	.02	295
September	6	3	4	.019	.02	220
The year	40	3	13.5	.061	.83	9,630
1899–1900.						
October	26	4	11	.050	.06	683
November	24	10	14	.064	.07	847
December	39	16	20	.091	.10	1,247
January	89	22	32	.14	.16	1,968
February	23	18	20	.09	.09	1,111
March	30	16	20	.09	.10	1,230
April	26	13	17	.08	.09	1,012
May	86	16	37	.17	.20	2,275
June	22	8	15	.07	.08	893
July	10	4	6	.03	.03	369
August	5	4	4	.02	.02	246
September	6	3	4	.02	.02	238
The year	89	3	16.7	.075	1.02	12,100
1900–1901.						
October	6	4	5	.02	.02	307
November	.....	.....	186	.84	.93	11,068
December	.....	.....	40	.18	.11	1,269
January	1,450	28	169	.76	.87	10,391
February	2,605	137	680	3.06	3.19	37,765
March	440	135	221	1.00	1.15	13,589
April	130	95	110	.50	.50	6,545
May	272	83	121	.55	.63	7,440
June	93	41	63	.28	.31	3,749
July	41	24	30	.14	.16	1,845
August	27	15	20	.09	.10	1,240
September	20	15	17	.08	.09	1,012
The year	2,605	4	138	.624	8.12	96,200

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Combined monthly discharge of San Gabriel River and canals near Azusa, Calif., for 1894–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1901–2.						
October	122	0	24	0.11	0.13	1,476
November	50	29	32	.14	.16	1,904
December	30	26	27	.12	.14	1,660
January	51	24	28	.13	.15	1,722
February	120	38	37	.17	.18	2,055
March	378	63	99	.45	52	6,088
April	99	48	66	.30	.33	3,928
May	48	30	39	.18	.21	2,398
June	30	14	20	.09	.10	1,190
July	17	8	11	.05	.06	676
August	8	6	7	.03	.03	430
September	6	4	5	.02	.02	298
The year	378	0	32.9	.149	2.03	23,800
1902–3.						
October	10	6	7	.03	.03	430
November	80	8	19	.09	.10	1,131
December	68	16	32	.14	.16	1,968
January	2,999	22	148	.67	.77	9,100
February	203	61	102	.46	.48	5,665
March	1,417	57	257	1.16	1.34	15,802
April	5,892	267	792	3.57	3.98	47,127
May	355	125	217	.98	1.13	13,343
June	125	62	95	.43	.48	5,653
July	58	35	43	.19	.22	2,644
August	35	24	29	.13	.15	1,783
September	34	21	25	.11	.12	1,488
The year	5,892	6	147	.663	8.96	106,000
1903–4.						
October	32	20	24	.11	.13	1,476
November	26	22	24	.11	.12	1,428
December	26	22	24	.11	.13	1,476
January	28.2	23	24.4	.11	.13	1,500
February	438	23	47.7	.21	.23	2,744
March	1,130	35	110.8	.50	.58	6,813
April	120	57	89.7	.40	.45	5,337
May	104	37	66.5	.30	.35	4,089
June	38	17.5	25.5	.11	.12	1,517
July	18	11	14.0	.06	.07	861
August	29	9.5	12.9	.06	.07	793
September	13.5	7.5	10.8	.05	.06	643
The year	1,130	7.5	39.5	.178	2.44	28,700
1904–5.						
October	15.5	9	12	.05	.06	738
November	14.5	11	12.8	.06	.07	762
December	48	14.7	16.9	.08	.09	1,039
January	108	18.5	36.6	.165	.19	2,251
February	3,010	34	466	2.10	2.19	25,880
March	11,130	142	1,222	5.50	6.34	75,140
April	474	206	329	1.48	1.65	19,580
May	540	193	278	1.25	1.44	17,090
June	182	63	139	.626	.70	8,271
July	109	56	83.0	.374	.43	5,103
August	55	33	42.8	.193	.22	2,631
September	35	28	31.4	.141	.16	1,869
The year	11,130	9	222	1.00	13.54	160,000
1905–6.						
October	32	27	28.8	.130	.15	1,770
November	97	29	44.7	.201	.22	2,660
December	50	37	40.1	.181	.21	2,470
January	430	36	68.9	.310	.36	4,240
February	97	47	71.3	.321	.33	3,960
March	9,430	56	2,100	9.46	10.91	129,000
April	1,110	321	582	2.62	2.92	34,600
May	1,110	251	341	1.54	1.78	21,000
June	364	202	261	1.18	1.32	15,500
July	192	97	152	.685	.79	9,350
August	93	57	73.0	.329	.38	4,490
September	55	42	47.7	.215	.24	2,840
The year	9,430	27	321	1.45	19.61	232,000

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Combined monthly discharge of San Gabriel River and canals near Azusa, Calif., for 1894–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1906–7.						
October	42	38	39.8	0.179	0.21	2,450
November	47	37	40.4	.182	.20	2,400
December	1,600	45	188	.847	.98	11,600
January	4,670	88	949	4.27	4.92	58,400
February	1,190	686	848	3.82	3.98	47,160
March	6,810	686	1,880	8.47	9.76	116,000
April	1,550	491	982	4.42	4.93	58,400
May	491	302	350	1.58	1.82	21,500
June	288	201	254	1.14	1.27	15,100
July	201	108	136	.613	.71	8,360
August	108	79	87.7	.395	.46	5,390
September	82	50	60.2	.271	.30	3,580
The year	6,810	37	485	2.18	29.54	350,000
1907–8.						
October	100	50	66.5	.300	.35	4,090
November	79	55	63.9	.288	.32	3,800
December	76	53	58.6	.264	.30	3,600
January	1,240	48	180	.811	.94	11,100
February	766	181	260	1.17	1.26	15,000
March	278	132	207	.932	1.07	12,700
April	225	132	156	.703	.78	9,280
May	163	82	117	.527	.61	7,190
June	82	49	70.4	.317	.35	4,190
July	89	34	41.6	.187	.22	2,560
August	60	29	36.0	.162	.19	2,210
September	62	26	30.6	.138	.15	1,820
The year	1,240	26	107	.482	6.54	77,500
1908–9.						
October	40	29	33.6	.151	.17	2,070
November	36	31	32.9	.148	.17	1,960
December	80	34	46.7	.210	.24	2,870
January	4,080	39	414	1.86	2.14	25,500
February	7,100	308	1,070	4.82	5.02	59,400
March	1,500	209	428	1.93	2.22	26,300
April	710	309	471	2.12	2.36	28,000
May	309	162	248	1.12	1.29	15,200
June	173	111	144	.649	.72	8,570
July	109	61	82.0	.369	.43	5,040
August	59	42	50.7	.228	.26	3,120
September	52	35	39.0	.176	.20	2,320
The year	7,100	29	255	1.15	15.22	180,000
1909–10.						
October	50	34	37.5	.169	.19	2,310
November	92	34	48.4	.218	.24	2,880
December	5,690	53	340	1.53	1.76	20,900
January	12,500	269	1,130	5.09	5.87	69,500
February	322	151	207	.932	.97	11,500
March	249	136	156	.703	.81	9,590
April	170	102	139	.626	.70	8,270
May	102	68	82.1	.370	.43	5,050
June	68	49	59.8	.269	.30	3,560
July	50	34	39.9	.180	.21	2,450
August	33	25	27.8	.125	.14	1,710
September	25	21	23.1	.104	.12	1,370
The year	12,500	21	191	.860	11.74	139,000
1910–11.						
October	32	22	25.4	.114	.13	1,560
November	39	26	31.4	.141	.16	1,870
December	36	31	32.8	.148	.17	2,020
January	5,260	32	605	2.73	3.15	37,200
February	3,250	215	797	3.59	3.74	44,300
March	9,160	310	1,980	8.92	10.28	122,000
April	763	320	474	2.14	2.39	28,200
May	400	200	270	1.22	1.41	16,600
June	200	99	126	.568	.63	7,500
July	100	71	85.1	.383	.44	5,230
August	69	46	58.7	.264	.30	3,610
September	113	40	47.6	.214	.24	2,830
The year	9,160	22	378	1.70	23.04	273,000

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Combined monthly discharge of San Gabriel River and canals near Azusa, Calif., for 1894–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1911–12.						
October	74	44	51.0	0.230	0.27	3,140
November	52	43	47.0	.212	.24	2,800
December	56	43	46.7	.210	.24	2,870
January	53	0	44.1	.199	.23	2,710
February	42	35	38.8	.175	.19	2,230
March	3,020	39	371	1.67	1.92	22,900
April	723	115	302	1.36	1.52	18,000
May	275	118	177	.797	.92	10,900
June	118	63	83.9	.378	.42	4,990
July	69	40	49.8	.224	.26	3,060
August	40	27	31.9	.144	.17	1,960
September	31	23	26.0	.117	.13	1,550
The year	3,020	0	106	.477	6.51	77,100
1912–13.						
October	39	24	29.8	.134	.15	1,830
November	35	27	29.0	.131	.15	1,730
December	31	26	28.6	.129	.15	1,760
January	148	25	47.4	.214	.25	2,910
February	1,960	39	237	1.07	1.11	13,200
March	252	107	166	.748	.86	10,200
April	159	107	120	.541	.60	7,140
May	103	59	80.8	.364	.42	4,970
June	62	34	48.6	.219	.24	2,890
July	39	22	27.5	.124	.14	1,690
August	23	15	17.4	.078	.09	1,070
September	21	13	15.0	.068	.08	893
The year	1,960	13	69.4	.313	4.24	50,300
1913–14.						
October	17	13	14.8	.067	.08	910
November	116	17	38.3	.173	.19	2,280
December	47	31	35.3	.159	.18	2,170
January	9,150	38	999	4.50	5.19	61,400
February	11,800	267	2,170	9.78	10.18	121,000
March	2,100	340	781	3.52	4.06	48,000
April	420	340	360	1.62	1.81	21,400
May	339	219	275	1.24	1.43	16,900
June	215	117	161	.725	.81	9,580
July	114	81	90.6	.408	.47	5,570
August	80	49	59.1	.266	.31	3,630
September	53	41	45.8	.206	.23	2,730
The year	11,800	13	408	1.84	24.94	296,000
1914–15.						
October	51	40	45.0	.203	.23	2,770
November	46	38	41.0	.185	.21	2,440
December	125	49	69.7	.114	.13	4,290
January	1,430	57	120	.541	.62	7,380
February	1,190	145	544	2.45	2.55	30,200
March	480	290	350	1.58	1.82	21,500
April	340	252	290	1.31	1.46	17,300
May	360	268	332	1.50	1.73	20,400
June	272	138	192	.865	.97	11,400
July	164	90	114	.514	.59	7,010
August	90	52	64.8	.292	.34	3,980
September	61	48	54.9	.247	.28	3,270
The year	1,430	38	182	.820	10.93	132,000
1915–16.						
October	48	41	45.0	.203	.23	2,770
November	61	42	50.6	.228	.25	3,010
December	76	48	58.2	.262	.30	3,580
January	22,300	63	2,410	10.90	12.57	148,000
February	1,300	415	685	3.09	3.33	39,400
March	845	370	566	2.55	2.94	34,800
April	464	212	335	1.51	1.68	19,900
May	262	134	169	.761	.88	10,400
June	134	90	98.0	.441	.49	5,830
July	90	61	77.5	.349	.40	4,770
August	62	52	58.0	.261	.30	3,570
September	54	42	47.2	.213	.24	2,810
The year	22,300	41	384	1.73	23.61	279,600

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Combined monthly discharge of San Gabriel River and canals near Azusa, Calif., for 1894–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1916–17.						
October	410	74	114	0.514	0.59	7,010
November	77	66	69.4	.313	.35	4,130
December	3,990	62	221	.995	1.15	13,600
January	305	107	151	.680	.78	9,280
February	820	109	238	1.07	1.11	13,200
March	380	180	221	.995	1.15	13,600
April	197	161	176	.793	.88	10,500
May	161	116	140	.631	.73	8,610
June	116	63	88.6	.399	.45	5,270
July	76	42	51.0	.230	.27	3,140
August	50	27	35.7	.161	.19	2,200
September	29	23	25.4	.114	.13	1,510
The year	3,990	23	127	.572	7.78	92,000
1917–18.						
October	32	22	25.3	.114	.13	1,560
November	40	24	31.0	.140	.16	1,840
December	34	32	32.5	.146	.17	2,000
January	38	30	32.9	.148	.17	2,020
February	1,670	31	168	.757	.79	9,330
March	5,030	132	1,190	5.36	6.18	73,200
April	410	203	286	1.29	1.44	17,000
May	203	129	163	.734	.85	10,000
June	129	81	101	.455	.51	6,010
July	83	50	64.5	.291	.34	3,970
August	53	39	46.2	.208	.24	2,840
September	56	34	39.2	.177	.20	2,330
The year	5,030	22	183	.824	11.18	132,000

NOTE.—See pages 417–419 for monthly and yearly discharge of Southern California Edison Co.'s canal near Azusa. There is no separate table of tunnel diversion, when discharge is reported, except for years 1917–8.

FISH FORK OF SAN GABRIEL RIVER NEAR AZUSA, CALIF.

LOCATION.—About 300 feet above junction with San Gabriel River in NE. ¼ sec. 32, T. 3 N., R. 8 W., in the Angeles National Forest, and about 15½ miles northeast of Azusa.

RECORDS AVAILABLE.—1900, 1901, 1910, and 1912 (low-water record only).

ELEVATION.—About 3,300 feet above sea level.

DRAINAGE AREA.—10 square miles.

DISCHARGE.—Computed from gage-height record, giving head on weir.

COOPERATION.—Record furnished by Pacific Light & Power Corporation, through G. O. Newman, engineer.

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Low-water record of daily discharge, in second-feet, of Fish Fork of San Gabriel River near Azusa, Calif., for 1900, 1901, 1910, and 1912.

Day.	1900				1901		1910			1912		
	July.	Aug.	Sept.	Oct.	Aug.	Sept.	July.	Aug.	Sept.	July.	Aug.	Sept.
1	1.4	.....	.....	0.95	.....	.....	.....	4.0	2.8	.....	6.8	2.7
2	1.7	.....	.....	.90	4.9	.....	.....	3.9	2.8	.....	.....	.....
3	1.7	1.0	.....	.95	4.7	2.3	4.4	3.8	2.9	.....	.....	.....
4	1.7	.95	.....	.96	4.7	2.2	.....	3.7	2.9	.....	.....	.....
5	1.3	1.0	.....	.93	4.5	2.2	4.0	3.6	2.7	.....	.....	.....
6	1.2	1.1	.....	.93	4.4	2.2	.....	3.6	2.7	.....	.....	2.7
7	1.2	1.1	.....	.93	4.1	2.2	.....	3.6	2.7	.....	4.1	.....
8	1.2	.9	.....	.93	3.9	2.0	.....	3.5	2.7	.....	.....	.....
9	1.1	.95	1.5	.90	3.8	2.1	.....	3.5	2.6	.....	.....	.....
10	1.0	1.0	.9	.89	3.4	2.1	.....	3.4	2.6	.....	.....	2.6
11	.95	1.0	.95	.95	3.3	2.1	5.1	3.5	2.7	.....	3.6	.....
12	1.0	1.1	1.1	.95	3.8	2.1	5.0	3.4	2.5	5.9	.....	.....
13	1.0	1.1	1.1	1.01	3.6	1.9	5.0	3.3	2.6	.....	.....	.....
14	1.0	1.0	1.1	.....	3.7	1.9	5.2	3.3	2.7	.....	.....	.....
15	1.0	1.0	1.1	.....	3.4	1.9	5.1	3.2	2.9	.....	.....	.....
16	1.2	.9	.9	.....	3.4	2.0	5.1	3.2	2.8	.....	.....	.....
17	.95	.9	.9	.....	4.0	2.0	5.1	3.1	2.7	.....	3.7	2.6
18	1.0	.85	.9	.....	3.6	2.1	5.1	3.1	2.6	.....	.....	.....
19	1.0	.85	.85	.....	3.4	2.0	4.8	3.1	2.5	6.0	.....	.....
20	1.0	.95	.85	.....	3.3	2.0	6.2	3.1	2.5	.....	.....	.....
21	1.1	.9	.85	.....	3.2	2.1	5.3	3.1	2.4	.....	3.2	.....
22	1.1	.9	.8	.....	3.2	2.1	4.9	.....	2.4	.....	.....	2.3
23	1.1	.9	1.0	.....	2.9	2.4	4.6	.....	2.4	5.1	.....	.....
24	1.1	.9	1.0	.....	2.7	2.3	4.6	3.0	2.4	.....	.....	.....
25	1.0	.9	1.0	.....	3.0	2.2	4.6	3.0	2.4	.....	.....	.....
26	.9	.9	1.0	.....	2.8	2.1	4.5	2.9	2.4	.....	2.9	2.2
27	.9	.9	.8	.....	2.8	2.1	4.5	2.8	2.3	.....	.....	.....
28	.9	.9	.8	.....	.....	2.0	4.5	2.8	2.3	.....	.....	.....
29	.9	1.0	.8	.....	2.7	2.1	4.2	2.8	2.3	.....	.....	.....
30	.85	.95	.85	.....	2.6	2.3	4.3	2.7	2.4	4.3	.....	.....
31	.....	1.1	.....	.....	2.8	.....	4.1	2.8	.....	.....	.....	.....

IRON FORK OF SAN GABRIEL RIVER NEAR AZUSA, CALIF.

LOCATION.—About 300 feet above junction with San Gabriel River, in the Angeles National Forest, in SE. ¼ SW. ¼ sec. 32, T. 3 N., R. 8 W., and about 14½ miles northeast of Azusa.

RECORDS AVAILABLE.—1900, 1901, 1910, and 1912 (low-water record only).

ELEVATION.—About 3,000 feet above sea level.

DRAINAGE AREA.—13.7 square miles.

DISCHARGE.—Computed from gage-height record, giving head on weir.

COOPERATION.—Record furnished by Pacific Light & Power Corporation, through G. O. Newman, engineer.

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Low-water record of daily discharge, in second-feet, of Iron Fork of San Gabriel River near Azusa, Calif., for 1900, 1901, 1910, and 1912.

Day.	1900				1901		1910			1912		
	July.	Aug.	Sept.	Oct.	Aug.	Sept.	July.	Aug.	Sept.	July.	Aug.	Sept.
1	2.0	.....	.....	1.0	.....	.....	.....	5.0	3.8	.....	6.3	4.2
2	2.0	1.1	.....	1.1	5.1	4.5	4.6	4.9	3.9	.....	.....	.....
3	2.1	1.1	.....	1.0	5.4	3.3	.....	4.8	4.0	.....	.....	.....
4	2.1	1.1	.....	1.1	5.8	3.2	.....	4.7	4.0	.....	.....	.....
5	1.9	1.2	.....	1.2	5.8	3.2	.....	4.6	3.6	.....	.....	.....
6	1.9	1.2	.....	1.1	5.4	3.0	4.9	4.6	3.6	.....	.....	4.3
7	1.8	.....	.....	1.1	4.9	3.2	.....	4.5	3.5	.....	5.6	.....
8	1.7	1.2	.....	1.2	4.8	3.3	.....	4.5	3.4	.....	.....	.....
9	1.6	1.1	1.1	1.1	4.8	3.3	.....	4,5	3.4	.....	.....	.....
10	1.6	1.2	1.1	1.1	4.9	3.3	.....	4.4	3.4	.....	.....	4.2
11	1.5	1.2	1.1	1.2	4.6	3.3	5.8	4.5	3.4	.....	5.4	.....
12	1.4	1.1	1.1	1.2	4.5	3.3	5.7	4.5	3.5	7.3	.....	.....
13	1.4	1.1	1.1	1.2	4.1	3.2	5.7	4.6	3.6	.....	.....	.....
14	1.4	1.2	1.1	1.3	4.2	3.2	5.7	4.5	3.6	.....	.....	.....
15	1.4	1.2	1.2	.....	4.2	3.1	5.7	4.4	3.7	.....	.....	.....
16	1.4	1.1	1.1	.....	4.4	3.1	5.6	4.4	3.6	.....	.....	3.7
17	1.4	1.1	1.2	.....	4.6	3.0	5.5	4.3	3.6	.....	5.2	.....
18	1.4	1.1	1.1	.....	4.7	3.0	5.5	4.3	3.4	.....	.....	.....
19	1.4	1.1	1.1	.....	4.4	3.0	5.5	4.3	3.4	7.3	.....	.....
20	1.4	1.2	1.0	.....	4.2	3.1	5.6	4.3	3.4	.....	.....	.....
21	1.3	1.1	.9	.....	4.2	3.2	5.4	4.3	3.3	.....	4.8	.....
22	1.3	1.1	.85	.....	4.2	3.3	5.4	4.2	3.3	.....	.....	3.5
23	1.4	1.0	1.1	.....	4.2	3.9	5.4	4.0	3.3	.....	.....	.....
24	1.2	1.0	1.3	.....	3.9	3.9	5.3	4.0	3.3	.....	.....	.....
25	1.3	.95	1.2	.....	3.8	3.7	5.3	3.9	3.3	6.7	4.6	.....
26	1.2	.95	1.2	.....	3.7	3.2	5.3	4.0	3.2	.....	.....	3.4
27	1.3	.95	1.0	.....	3.9	3.2	.....	4.0	3.2	.....	.....	.....
28	1.2	1.0	1.0	.....	3.4	3.1	.....	4.0	3.2	.....	.....	.....
29	1.1	1.1	1.0	.....	3.8	3.1	.....	3.9	3.2	.....	.....	.....
30	1.1	1.1	1.2	.....	3.8	3.2	.....	3.8	3.3	6.8	.....	.....
31	1.2	1.1	.....	.....	3.8	.....	.....	3.8	.....	.....	.....	.....

COLDWATER CREEK ABOVE MOUTH, CALIF.

Daily discharge, in second-feet, over weir on Coldwater Creek, Calif., 2½ miles from mouth, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	0.43	0.52	.....	21	.....	0.56	.....	.....
2	.....	.....	.58	0.60	22	.....	.51	.....	.....
3	.....	.49	.62	.62	23	.....	.49	.....	.....
4	.....	.46	.57	.61	24	.....	.45	.....	.....
5	.....	.54	.55	.63	25	.....	.44	.....	.....
6	.....	.53	.56	.61	26	.....	.45	.....	.....
7	.....	.50	.51	.58	27	.37	.42	.....	.....
8	.....	.50	.51	.58	28	.49	.42	.....	.....
9	.....	.53	.56	.58	29	.50	.41	.....	.....
10	.....	.56	.50	.55	30	.47	.40	.....	.....
11	.....	.53	.55	.60	31	.46	.56	.....	.....
12	.....	.51	.52	.60	Mean	.46	.48	0.55	0.60
13	.....	.46	.....	.64					
14	.....	.47	.....	.....					
15	.....	.45	.....	.....					
16	.....	.45	.....	.....					
17	.....	.47	.....	.....					
18	.....	.47	.....	.....					
19	.....	.52	.....	.....					
20	.....	.55	.....	.....					

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WEST FORK OF SAN GABRIEL RIVER ABOVE NORTH FORK, CALIF.

Daily discharge, in second-feet, over weir on West Fork of San Gabriel River, Calif., above North Fork, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	0.55	0.05	0.12	0.16	21	0.07	0.12	0.16	.....
2	.62	.02	.12	.16	22	.12	.10	.16	.....
3	.68	.....	.12	.16	23	.....	.07	.....	.....
4	.62	.....	.12	.16	24	.....	.08	.....	.....
5	.53	.....	.08	.15	25	.08	.08	.12	.....
6	.55	.....	.11	.20	26	.....	.....	.20	.....
7	.55	.....	.16	.20	27	.....	.08	.16	.....
8	.55	.....	.12	.16	28	.05	.08	.16	.....
9	.44	.....	.12	.16	29	.08	.10	.13	.....
10	.34	.....	.16	.13	30	.05	.12	.14	.....
11	.29	.....	.16	.20	31	.05	.10	.....	.....
12	.26	.08	.12	.20	Mean	.29	.09	.14	0.17
13	.24	.07	.12	.20					
14	.20	.08	.16	.....					
15	.13	.08	.16	.....					
16	.12	.12	.16	.....					
17	.16	.10	.16	.....					
18	.16	.12	.11	.....					
19	.12	.10	.12	.....					
20	.12	.12	.12	.....					

WEST AND NORTH BRANCHES OF NORTH FORK OF SAN GABRIEL RIVER AT WEIR, CALIF.

The following tables are prepared from measurements made three times daily for the San Gabriel Electric Co. and filed in a suit before the United States land office at Los Angeles, Calif. The mean of the three daily measurements is here given.

Daily discharge, in second-feet, over weir on the west branch of North Fork of San Gabriel River, Calif., for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	0.23	0.19	0.20	21	0.39	0.22	0.15	.....
2	0.28	.23	.19	.12	22	.24	.22	.12	.....
3	.27	.23	.17	.18	23	.26	.22	.15	.....
4	.27	.26	.22	.18	24	.26	.23	.22	.....
5	.26	.17	.12	.23	25	.28	.22	.27	.....
6	.28	.23	.12	.23	26	.37	.23	.26	.....
7	.24	.23	.22	.19	27	.37	.18	.26	.....
8	.23	.22	.18	.19	28	.26	.18	.22	.....
9	.25	.12	.20	.19	29	.23	.25	.20	.....
10	.23	.12	.22	.19	30	.23	.20	.17	.....
11	.25	.19	.22	.19	31	.23	.....	.....	.....
12	.25	.19	.22	.19	Mean	.28	.21	.19	0.19
13	.22	.19	.22	.22					
14	.27	.19	.18	.....					
15	.27	.15	.18	.....					
16	.31	.26	.12	.....					
17	.31	.23	.12	.....					
18	.27	.23	.25	.....					
19	.31	.23	.15	.....					
20	.39	.22	.12	.....					

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Daily discharge, in second-feet, over weir on the north branch of North Fork of San Gabriel River, Calif., for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	0.89	0.62	0.65	21	0.97	0.60	0.53	.....
2	0.92	.89	.62	.72	22	.96	.....	.53	.....
3	.92	.89	.62	.68	23	1.07	.55	.53	.....
4	.92	.95	.62	.68	24	.95	.52	.81	.....
5	.89	.95	.60	.68	25	.95	.52	.68	.....
6	.89	.74	.65	.68	26	.96	.56	.65	.....
7	.89	.74	.61	.56	27	.68	.57	.65	.....
8	.82	.74	.61	.56	28	.68	.57	.68	.....
9	.80	.77	.83	.56	29	.89	.57	.68	.....
10	.70	.77	.61	.57	30	.86	.74	.68	.....
					31	.68	.....	.....	.....
11	.81	.74	.61	.59					
12	.83	.74	.63	.59	Mean	.89	.70	.63	0.62
13	.86	.77	.61	.59					
14	.95	.68	.63	.....					
15	.97	.74	.63	.....					
16	.97	.62	.59	.....					
17	.97	.65	.59	.....					
18	.97	.65	.59	.....					
19	.97	.62	.59	.....					
20	.97	.60	.59	.....					

SOUTHERN CALIFORNIA EDISON CO.'S CANAL[1] NEAR AZUSA, CALIF.

LOCATION.—At Southern California Edison Co.'s power house, about 5 miles southwest of intake on San Gabriel River, and 1½ miles north of Azusa, Los Angeles County.

RECORDS AVAILABLE.—1896 to September 30, 1918.

DISCHARGE.—Computed from record showing kilowatt output of power plant, on the assumption that 1 second-foot develops 25 kilowatts. Low-water record at power plant not reliable; discharge computed from weir records obtained at sand box about one-fourth mile below intake.

EXTREMES OF DISCHARGE.—1896–1918. Maximum mean daily discharge recorded November 27, 1906 (discharge, 97 second-feet); canal usually dry for a few days each year.

ACCURACY.—Records good.

Diversion dam for canal is on San Gabriel River in SE. ¼ SE. ¼ sec. 31, T. 2 N., R. 9 W., about 5 miles above gaging station on San Gabriel River, at the mouth of the canyon near Azusa. The water is used for power development at a point about 1½ miles north of Azusa, and after leaving the power plant is divided and used for irrigation; part is discharged into Azusa-Covina canal and the rest into Duarte canal. During the rainy season part of the water from the power plant is wasted back into San Gabriel River below the gaging station.

[1] Published in early reports as San Gabriel power canal, and later as Pacific Light & Power Corporation's canal.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898-1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1898.												
1	.....	.....	.....	28	28	33	36.5	26	30	14.5	9.5	8.2
2	.....	.....	.....	28	28	32	37	39	28	13	9.5	10
3	.....	.....	.....	28	28	31	37	37	25	13.5	9.5	8.2
4	.....	.....	.....	28	28	31	37	36	23.5	13	9	8.2
5	.....	.....	.....	27	32	31	37.5	34	22.8	13	9	8.2
6	.....	.....	.....	27	32	31	36.5	31.5	21	12	9	8.2
7	.....	.....	.....	27	32	30	36	32	20.2	14	8.5	7.9
8	.....	.....	.....	27	29	30	35	31	20	12.5	8.5	7.9
9	.....	.....	.....	32	29	28	35	30	20	11.5	8.5	8
10	.....	.....	.....	32	29	34	35	28	21.5	11.5	8.4	8
11	.....	.....	.....	31	29	34	34	25	23.5	11	8.5	7.5
12	.....	.....	.....	25	32	32.5	32.5	25	22	11	8.5	7.5
13	.....	.....	.....	25	32	34	32.5	25	21.4	10	8.4	7.5
14	.....	.....	.....	25	32	33.5	32.5	25.5	21	10	6.5	7.5
15	.....	.....	.....	25	32	33.5	34	20	20.2	9.7	7	7
16	.....	.....	.....	25	10	36	34	27.5	18	10	7	7
17	.....	.....	.....	25	10	36	34	45.5	17.5	9.7	7	6.7
18	.....	.....	.....	25	29	37	34	40	16.2	10	7	6.5
19	.....	.....	.....	25	29	37	33	38.5	15.2	10	5	6.5
20	.....	.....	.....	25	29	37	33	33.5	17	10	5.5	6.1
21	.....	.....	.....	25	29	37	32	37	16	11.5	6	7.5
22	.....	.....	.....	24	29	36	30	36	17	11.5	6	7.5
23	.....	.....	.....	24	29	34	29	35	17.3	11.5	6	7.5
24	.....	.....	.....	23	34	34	27	32.5	17	9.5	6	7.5
25	.....	.....	.....	23	34	34	26	30.5	16	9.5	5.5	8.5
26	.....	.....	.....	23	34	48	25.3	30	16	9	5.5	8.5
27	.....	.....	.....	23	34	41	25.3	30	16	9	6.3	7.5
28	.....	.....	.....	23	34	39	27	30.5	15.8	9	7.5	10.2
29	.....	.....	.....	23	.....	36	30	29.5	15	9.5	7	8
30	.....	.....	.....	23	.....	36	35.5	30.5	14.5	9.5	7	10.2
31	.....	.....	.....	28	.....	37	.....	30	.....	9.5	7	.....
1898-99.												
1	9	9	11.7	14.8	27.2	20.3	28	17.5	22.2	4	5	3.4
2	9.8	8.5	11.8	24.2	28	20.3	27.5	17.5	20	4	5.1	3
3	10	8.5	11.8	20.3	26.2	21.5	25.2	17	17	4	5.5	4
4	10.5	8	11.9	19	24.2	19.4	24.8	17	15	4	5.5	4.3
5	9	8.5	11.9	19	23.5	18.7	24.8	15.5	14.8	4	6	3.7
6	9	9	11.9	18	23.5	18.5	25	17.5	13.5	4.2	6	4.3
7	8.5	9	12	18	23.5	18	24	17.5	12	4.2	5	3.7
8	8.5	9	12	18	23.5	18.5	22.2	16.5	11	3.5	4.7	4.5
9	8.5	8.5	12	18	23.4	18.7	22	15.5	9.7	3.4	4.7	5.5
10	9	8.7	12.2	22	23.4	18.7	23.5	14	8.5	3.4	4.5	5
11	8.7	9	12.5	33	23.4	19	23.5	13	8.8	3.5	4.7	4
12	8	9.8	12.6	32	23.4	19	22.2	13	9	3.4	4.5	4
13	8	9.8	12.6	22	23	19	21	12.5	9.5	3	4.5	3.6
14	7.5	9.2	12.6	22	21.8	19	21	12	9.2	3.4	4.3	3.8
15	7.5	9.8	18.2	22	21.6	19	20.5	12.5	8	3.5	4	4.2
16	7.5	9.8	15.2	22	20.3	31.2	20	14.1	7.8	3.5	4	4
17	8	9.8	15	18	20	36.4	19.7	13	7.5	3.3	4.5	3.7
18	8	9	15	18	20	35	19.5	13	7.5	3	6	3.7
19	8.4	10.1	14.4	19.7	19.7	29	19.5	13.5	7.3	3	6	3.7
20	8.6	10.5	14.5	19.3	19.7	39.5	18.5	11.5	7	3	6	3.7
21	7.9	10.5	14.5	20.4	19.7	37.4	17	11.5	7	3	5.5	3.3
22	8.2	10.5	14.5	21.6	19.7	32.7	16.5	11.5	6.2	3.3	5.5	3.3
23	9	11.2	14.5	22.8	20.3	31.7	16.2	11.5	6.2	3.5	5	3.3
24	10	11.2	14.5	23.6	22.4	32.5	17.5	12	6.2	3.5	4	3
25	9	10.5	14.8	24	21.8	35.5	19.3	12	6.2	3.5	4	3
26	9.1	10.5	14	24	21.2	35.4	21	12	6.2	4	4	3
27	9.1	10.5	14	24.1	21.2	32	21.3	11.5	6	4	4	3.3
28	8.9	11	14	23.5	21	32	20.5	11.5	5.5	4	5.5	3.3
29	8.9	11 5	14.3	23.2	.....	31.6	18	12.7	5.5	4	4	3.3
30	8.4	11.5	14	24.2	.....	30	17.5	12	4.9	4	4	3.7
31	8.4	.....	14.5	26.2	.....	29.5	.....	13.5	.....	4	4	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1899–1900.												
1	3.7	12	16.2	[a]22	[a]22.8	17	15.5	17	21	9.9	3.5	4.5
2	4	11.5	16	[a]22	[a]22.7	17	16	17	21.5	10.1	3.5	4.7
3	4	11.5	16	40	[a]22.6	[a]17.5	17	16.2	19.4	9.6	3.5	5.2
4	4	11.7	16	50	22.5	[a]27.5	16	25	[a]18.5	8.4	3.5	5
5	4	10.1	16.3	[a]50	23	[a]30	16	[a]48	18	8.9	4.4	4.6
6	4	10.2	16	[a]40	[a]22.5	[a]24.5	15.5	54	17.5	7.8	4.6	4.3
7	4.3	10.2	16	40	[a]22.2	23	20	[a]54	[a]17.5	7.4	4.4	4.1
8	3.7	10.2	15.7	[a]38	21.8	[a]22	17.6	[a]49	[a]17.5	7.6	4.3	4
9	3.7	10.3	15.5	[a]34	21.5	21	16.3	[a]43	.....	7.2	4.5	4.2
10	4.4	12	15.5	[a]31	20.8	20	16.1	[a]43	17.1	6.6	4.7	4.3
11	8.5	12	15.5	32	20.6	20	15	[a]56	17.5	6.2	4	4.5
12	9	12	15.5	[a]31	20.5	19.5	[a]14.6	56	17.1	5.6	4.6	4.5
13	22	12	15.5	[a]30	20.4	19.3	[a]15	52	18.1	5.1	4.3	4.6
14	22	14.5	15.5	30	20.4	20	[a]15	47	17.5	5.1	4.5	4.8
15	26	15	16	[a]29.2	20.3	18	[a]14.6	41.6	16	7.2	4.1	4.5
16	19	15	23	[a]28.5	20.3	18	[a]13.5	40.3	15.4	5.9	3.9	4.1
17	16	15	39	[a]28	19.5	18	[a]13.5	39	14.3	5.6	3.7	3.7
18	15	14	30	27.5	19	17.6	[a]13	[a]38.5	13.7	5.3	4.3	3.5
19	13.5	14	28	[a]27	19	18.4	[a]13	[a]36.5	12.3	5.3	4.6	3.3
20	13.5	14	25	[a]26.5	19	18.2	[a]14	[a]31	11.5	5.9	4.5	3.4
21	13	16	23	26	18.7	18.1	[a]26	[a]30.5	11.7	5.4	4	3.3
22	13.5	23.5	22.5	[a]25.4	18.7	18	[a]22	[a]29	10.9	5.4	3.6	3.1
23	14	20	21.5	[a]24.8	17.5	25	[a]19	[a]30.5	10.1	4.8	3.6	3.8
24	14	18.3	20.7	[a]24.2	18	23	18.5	[a]29.5	11	4.6	3.6	5.2
25	12.5	18	20.7	24.5	18	20	18.5	[a]27	10.8	4.3	3.6	5.7
26	12	17.2	20.7	[a]24.4	18	20	19.7	[a]24	10.1	4.3	3.6	5.2
27	12	17	20.7	[a]24.3	18	19.5	21	[a]23.5	9.6	4.6	3.7	4.7
28	12.3	17	21	24.2	17.5	17.5	21.5	[a]22.5	9.6	4.2	3.6	4.3
29	11.5	16.7	23	[a]23.8	.....	17	20.6	[a]22	9.1	4.9	3.5	4.2
30	13	16.3	23	23.4	.....	15.5	18.5	[a]21	8.3	4.5	3.9	3.9
31	12.3	.....	22	23	.....	15.5	.....	[a]19.5	.....	4.1	4.3	.....
1900–1901.												
1	3.7	5.3	52.6	28	67	70	55	72	66	41	23.5	15
2	4.2	5.5	49.6	28	67	70	55	72	66	41	24.2	15
3	4.7	5.5	48.7	28	67	70	55	59	66	41	25	18.7
4	4.8	5.5	46.2	28	67	70	55	59	63	40	25	19
5	4.9	5.6	44.3	28	5	70	55	59	63	38	26.8	18.8
6	4.9	5.8	42.9	.....	70	70	68	59	63	36	24	19.2
7	4.5	5.8	43.5	.....	70	70	60	59	63	34	23.4	19
8	4.3	5.8	42.3	35	70	69	56	67	63	33	23	17.9
9	4	5.8	35.6	90	70	69	56	67	63	33	22	17.3
10	4	5.9	35.6	78	70	69	56	67	63	32.5	21	17.2
11	4.4	5.5	34.5	71	70	69	56	68	63	32	20	16.8
12	4.7	5.7	31.4	70	70	69	56	68	62	32	20	16.6
13	5.6	5.7	33.6	69	70	69	56	68	62	31.5	21	16.4
14	6.4	5.9	32.9	69	70	69	59	68	60	30	19.5	16.4
15	5.8	6.2	32.3	68	70	69	63	68	60	30	19.5	15.9
16	5.3	7.1	32.4	68	70	69	63	68	60	30	19.5	16
17	5.2	13.4	.....	67	70	68	70	68	55	29	19	15.7
18	5.5	15.6	.....	66	70	68	70	68	54.5	28	21	15.8
19	5.6	13.2	.....	66	70	68	70	68	54	27	19.3	15.6
20	6	16.7	.....	66	70	68	70	65	53.5	28	19	15.7
21	5.7	[b]31.8	.....	77	70	35	71.5	65	50	29	19	16.5
22	5.5	.....	.....	73	70	57	71.5	65	49.5	27	18.5	18.6
23	5.5	.....	.....	70	70	57	82	65	49.5	26	18	19.6
24	5.8	.....	.....	69	70	57	82	66	49.5	25	17	20.4
25	5.8	.....	.....	68	70	57	82	66	52	24.7	15.7	19.1
26	5.8	.....	.....	68	70	57	82	66	48.5	24.2	15	17.9
27	5.3	.....	.....	68	70	57	82	66	46.5	24.2	15	17.5
28	5.8	45.2	.....	71	70	39	82	66	43.5	24.2	15	17.3
29	6.2	48	.....	70	.....	39	82	66	41	24.2	15	18.7
30	5.7	54.8	.....	67	.....	55	84	66	41	25	15	20.4
31	5.7	.....	.....	67	.....	55	.....	66	.....	24.2	15	.....

[a] Estimated. [b] Power conduit washed out soon after noon.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901-2.												
1	21	36	29	25	30	58	62	48	30	16	7	5
2	20	34	29	25	30	60	62	48	28	16	7	5
3	20	33	29	25	30	60	62	48	26	16	8	5
4	20	32	30	25	30	60	62	47	26	17	7	5
5	20	30.5	30	25	30	61	62	46	25	17	8	5
6	20	30	30	25	29	62	62	46	23	16	8	5
7	17	30	30	25	29	62	62	46	21	16	7	5
8	15.5	30	29	25	29	62	62	45	20	14	7	4
9	16	30	38.7	25	29	62	62	43	20	12	8	5
10	16	50	29	25	29	62	62	43	22	12	8	5
11	15.5	46	29	25	29	62	62	43	25	11	8	5
12	14.5	36	29	24	29	62	62	42	25	10	8	5
13	14.5	35	29	24	28	62	46	40	22	10	8	5
14	14.5	34	29	24	28	62	62	44	22	10	8	5
15	15	33	29.5	24	28	62	62	42	21	10	8	5
16	15.5	32.5	29	24	28	62	62	40	20	10	8	6
17	15.5	32	28.5	24	28	62	62	40	20	10	8	6
18	15.5	32	28.5	27	28	62	60	37	19	10	8	6
19	16	31	28.5	30	27	62	61	37	18	10	8	6
20	15.5	31	28.5	28	27	62	61	37	16	8	8	6
21	14.5	31	28	26	32	62	62	37	16	8	7	6
22	14.5	30	28	26	38	62	62	36	16	8	6	6
23	16	29	27	26	34	62	60	35	14	8	6	6
24	17	29	27	51	35	62	60	34	14	8	7	6
25	18	30	27	42	40	62	56	34	14	8	6	6
26	64	30	27	32	63	62	54	34	14	9	6	6
27	52	29	26	32	62	62	52	32	14	10	6	6
28	56	29	26	32	62	62	50	30	15	10	6	6
29	50	29	26	32	.....	62	48	30	15	10	6	6
30	.....	29	.....	31	.....	55	48	30	14	9	6	6
31	.....	.....	.....	30	.....	62	.....	30	.....	8	6	.....
1902-3.												
1	6	9	16	30.5	68	59	72	70	70	58.5	34.8	23.5
2	6	8	16	30	68	57	22	70	70	57	34.8	23
3	6	8	16	29	68	57	20	70	70	55	34.5	23
4	6	8	16	28.5	70	70	20	70	70	53	32.5	22
5	6	8	17	28	70	72	52	70	68	52	31.5	21
6	6	8	17	27	70	72	54	70	70	50	30.7	24
7	6	8	18	27.5	70	72	54	70	70	50	30.7	27
8	6	9	18	26	70	72	62	70	68	49	30.7	23
9	6	9	24	25	70	72	62	70	68	47	30.2	23
10	6	9	30	25	70	72	62	70	70	46	30	22.5
11	7	62	36	24.5	70	72	62	70	84	43.5	30	22.5
12	8	43	32	24.5	70	72	62	70	84	43	30	24.7
13	8	25	28	24	70	72	62	70	81	43	30	26.0
14	8	23	26	23.5	70	72	62	70	84	43	30	27.7
15	6	23	25	23	70	72	62	70	84	43	29.5	25.5
16	6	23	25	22.5	74	72	62	70	83	42	28	23.5
17	6	22	46	22	74	72	62	70	82	42	26.7	22.5
18	6	22	68	22	74	72	62	70	81	42	25.8	23
19	6	22	61	22	74	72	16	70	80	42	26.3	23
20	7	22	55	22	74	72	18	70	79.5	41	26.3	23
21	7	21	48	22	74	72	40	70	79	40	25.8	23
22	8	20	42	22	72	72	52	70	79	38	25.3	22.5
23	9	20	35	22	70	72	62	70	81	38	25.8	21.7
24	10	20	35	22.5	68	72	62	50	80	37.5	26.4	21.7
25	10	20	35	23	65	72	62	70	73	37	26.9	24
26	9	20	35	23	63	72	0	60	66	36.5	27	24.5
27	8	20	35	32	61	72	68	60	64	36	27	29
28	8	20	34	64	61	72	68	68	63	36	26	34.5
29	8	19	33	64	.....	72	68	70	63	35.5	25	31.5
30	8	17	32	68	.....	72	68	70	62	35.3	25	31.5
31	8	.....	31	68	.....	72	.....	70	.....	34.8	24.5	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	31.5	21.5	21.5	24	23	47	66	67	38	18	10	11
2	31	22.5	24	24	23.5	51.5	66	67	36.5	17.5	9.5	10.5
3	30	22.5	24	24	23.5	47	66	67	35.5	17	10	10.5
4	29	22.5	23	24	23.5	42	66	67	32.5	17	10	10.8
5	26.5	22.5	22.5	24	59	40	66	67	32	16.5	10	11
6	26.5	23	24	23.5	37	38	66	67	31	16	10	9
7	26	23	23.5	23.3	31.5	37.5	66	67	30	16	12	8.5
8	26	24.5	24.5	24	31	35.5	68	67	30	15.7	12.7	7.5
9	26	24	24.5	24.5	30	35	68	67	29	15.5	11.5	8.5
10	27.8	24	24.5	24.5	30	35.5	68	67	28	15	11.5	9.5
11	24.8	24	24.7	24.5	30	60	68	67	26.5	13.8	11	9.5
12	22.8	24	25.5	24	28	60	68	66	25.2	14	10	9.5
13	22.5	25	25	24	28	56	66	65	25.2	14.3	29	12.5
14	22.5	25	25	23.5	28	51	64	64	23	15.5	15	11.5
15	22.5	25.5	25	23.5	28	49	64	61	24	15	14.5	11
16	22	25.5	25	23.5	40	46	61	59	23	15	14	10
17	21.6	25.5	24.5	23.5	41	44.5	58	56	22.5	14	14	11
18	20.5	24.5	24.5	28.2	38	42.6	57	55	22	14	13.7	12
19	21.5	24.5	24.8	27.4	34.5	41.5	66	53	22	13	13.7	12
20	21.5	24.5	24.8	27.4	33	50	66	51	22	12.5	13.7	12
21	21	25	24.8	25.5	31.4	48	66	49	25	11.8	13.5	12
22	21	24.5	24.8	25.2	30.8	46	66	48	23	12	15	12
23	21	23.4	24.5	24.6	30	62	67	44.5	23	12	15	11
24	21	24	24.5	24.5	29.5	62	67	44.5	23	11.1	14.5	12
25	21	24	24.5	24.5	29.5	62	67	46	22	11	14.5	12.7
26	21	23.3	24.5	24.5	29.5	62	67	51	19	11	13	13.5
27	21	23.3	24	24	30	62	67	46.5	18.5	12	12.5	12.5
28	21	23.3	24	23.5	0	62	67	40	18.5	11.5	11.5	12
29	21	23.3	24	23.5	38	66	67	40	18.5	12	11.3	10.5
30	21	21.5	24	23.5	.....	66	67	37	17.5	12	11	10.5
31	21	.....	24	23	.....	66	.....	38	.....	11	11	.....
1904–5.												
1	10.5	12.5	15	30	34	67	80	80	80	85	55	34
2	9	12.5	15.3	23	67	67	80	80	80	85	54	33
3	10	12.5	15.3	21	70	67	80	80	80	86	54	32
4	10	12.5	15.3	20	78	67	80	80	80	85	53	33
5	11	12.5	15.3	19.5	68	0	80	80	80	85	52	34
6	12	12.5	14.7	19	78	67	80	80	80	86	50	35
7	12.5	12.5	15.2	18.5	69	72	80	80	80	86	47	34
8	15	12	15.3	18.5	86	72	80	48	80	85	46	33
9	15.5	11	16	41	74	72	80	80	80	85	45	32
10	15.5	11	16	59	66	72	80	80	80	85	45	32
11	15.5	11.5	16	40	66	72	80	80	73	71	46	32
12	14.5	12	16	35	66	72	80	80	73	74	44	32
13	13.5	12.5	16	31	66	0	80	80	76	75	44	32
14	13	12.5	16	29	66	70	80	80	76	74	43	31
15	13.5	12.5	16	27	66	79	80	80	0	74	43	31
16	13.5	12.5	16	30	67	80	80	80	78	74	42	30
17	12	12.6	16	30	66	80	80	80	78	74	41	31
18	11.5	13.3	16	28	68	80	80	80	78	74	40	31
19	10.5	13	16	28	69	79	80	80	78	73	41	30
20	9.5	13.5	15.5	27	68	80	80	80	78	73	41	29
21	10	13.5	15.7	55	68	80	80	80	78	70	40	29
22	10.5	13.5	16.3	67	68	78	80	80	88	69	40	28
23	11	13.5	16.8	67	68	57	80	80	84	68	39	30
24	11	13	17	57	67	54	80	80	84	67	38	30
25	11	13	16.7	46	68	69	80	80	84	64	38	30
26	11.5	13.5	16	41	67	80	80	80	84	62	36	29
27	11.5	14	16.7	40	67	80	80	80	84	64	36	30
28	11.5	14	16.5	38	67	80	80	80	84	62	35	31
29	12	14.5	16	37	.....	80	80	80	84	60	34	32
30	12.5	14.5	16	36	.....	80	80	80	84	68	33	31
31	12.5	.....	48	34	.....	80	.....	80	.....	56	33	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	30	29	50	37	50	75	78	76	54	76	76	54
2	29	29	47	37	50	68	52	76	52	76	76	55
3	28	29	45	37	49	65	58	76	54	76	76	53
4	28	29	44	37	50	20	76	76	65	76	76	52
5	28	29	44	37	63	20	74	76	76	76	76	52
6	28	32	42	37	63	74	76	76	76	76	76	50
7	28	44	42	37	56	70	78	76	76	76	76	50
8	28	95	41	37	47	70	78	76	76	76	76	49
9	27	53	39	37	47	71	77	76	76	76	76	49
10	27	42	37	36	57	64	76	76	76	76	76	49
11	27	38	37	36	72	56	65	76	76	76	76	49
12	27	36	37	37	69	74	74	76	76	76	76	49
13	28	36	38	37	15	74	78	76	76	76	76	50
14	29	34	39	49	15	74	76	76	76	76	76	50
15	29	34	39	52	15	77	76	76	76	76	76	52
16	29	45	39	41	15	78	76	76	76	76	76	51
17	30	53	39	41	40	78	72	76	76	76	76	50
18	30	43	39	42	74	78	76	76	76	76	72	46
19	30	40	38	0	74	77	76	76	76	76	68	45
20	29	42	46	76	74	75	76	76	76	76	68	45
21	29	41	42	76	75	72	76	76	76	76	68	44
22	31	39	39	76	74	71	76	76	76	76	68	44
23	32	38	38	76	74	65	76	76	76	76	68	43
24	31	37	37	76	74	78	76	76	76	76	66	43
25	30	37	38	66	70	76	76	76	76	76	64	43
26	29	37	38	66	70	78	76	76	76	76	60	43
27	29	97	38	61	73	78	76	76	76	76	60	43
28	28	87	38	57	76	78	76	76	76	76	59	43
29	28	62	37	58	.....	76	76	53	76	76	59	42
30	29	53	37	54	.....	76	76	48	76	76	58	42
31	28	.....	38	52	.....	78	.....	60	.....	76	57	.....
1906–7.												
1	42	38	45	76	76	76	76	76	76	76	76	76
2	42	38	46	76	76	76	76	76	76	76	76	76
3	42	38	58	76	76	76	76	76	76	76	76	76
4	42	38	64	76	76	76	76	76	76	76	76	76
5	41	38	51	76	76	76	76	76	76	76	76	76
6	40	39	51	76	76	76	76	76	76	76	76	76
7	40	39	47	76	76	76	76	76	76	76	76	72
8	40	39	47	76	76	76	76	76	76	76	76	67
9	40	38	50	76	76	76	76	76	76	76	76	59
10	40	38	76	76	76	0	76	76	76	76	76	59
11	40	38	60	76	76	76	76	76	76	76	76	57
12	40	38	75	76	76	76	76	76	76	76	76	57
13	40	38	76	76	76	76	76	76	76	76	76	57
14	39	38	76	76	76	76	76	76	76	76	76	57
15	38	38	76	76	76	76	76	76	76	76	76	57
16	38	38	76	76	76	76	76	76	76	76	76	57
17	39	38	76	76	76	0	76	76	76	76	76	57
18	39	37	76	76	76	76	76	76	76	76	76	57
19	40	37	76	76	76	76	76	76	76	76	76	57
20	41	38	72	76	76	76	76	76	76	76	76	56
21	40	41	65	76	76	76	76	76	76	76	76	53
22	40	45	62	76	76	76	76	76	76	76	76	51
23	40	47	59	76	76	76	76	76	76	76	76	50
24	40	45	58	76	76	76	76	76	76	76	76	50
25	40	45	58	76	76	76	76	76	76	76	76	50
26	40	46	76	76	76	76	76	76	76	76	76	50
27	39	46	76	76	76	76	76	76	76	76	76	50
28	38	45	76	76	76	76	76	76	76	76	76	50
29	38	45	76	76	76	76	76	76	76	76	76	50
30	38	45	76	76	.....	76	76	76	76	76	76	51
31	38	.....	76	76	.....	76	.....	76	.....	76	76	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	51	76	54	56	76	76	76	76	76	48	37	29
2	50	76	54	54	76	76	76	76	76	47	42	29
3	50	76	53	54	76	76	76	76	76	45	43	28
4	50	71	54	52	76	76	76	76	76	44	42	26
5	58	69	54	52	76	76	76	76	76	45	40	26
6	63	66	54	51	76	76	76	76	76	43	40	26
7	60	65	76	51	76	76	76	76	76	43	39	26
8	56	66	76	50	76	76	76	76	76	42	39	28
9	54	67	67	50	76	76	76	76	76	42	37	29
10	50	76	63	50	76	76	76	27	76	42	42	32
11	50	73	66	50	76	76	76	76	76	42	41	30
12	50	66	62	48	76	76	76	76	76	42	39	28
13	50	64	58	49	76	76	76	76	76	42	38	27
14	50	63	57	76	76	76	76	76	76	41	37	28
15	66	62	57	76	76	76	76	76	76	40	37	26
16	76	61	57	66	76	76	76	76	76	39	37	26
17	76	58	57	58	76	76	76	76	76	39	35	27
18	75	59	57	56	76	76	76	76	76	39	34	28
19	70	59	57	56	76	76	76	76	76	39	34	27
20	67	61	57	56	76	76	76	76	76	38	32	26
21	61	61	56	54	76	76	76	76	76	37	32	28
22	66	61	55	54	76	76	76	76	76	37	31	28
23	76	61	55	65	76	76	76	76	76	36	30	26
24	76	58	54	76	76	76	76	76	56	36	30	62
25	76	57	54	76	76	76	76	76	54	36	30	54
26	76	57	54	76	76	76	76	76	53	36	30	39
27	76	57	54	76	76	76	76	76	52	36	30	36
28	76	57	65	76	76	76	76	76	51	36	29	33
29	76	56	67	76	.....	76	76	76	50	35	29	32
30	76	55	57	76	.....	76	76	76	49	34	29	31
31	76	.....	57	76	.....	76	.....	76	.....	33	29	.....
1908–9.												
1	30	32	34	39	66	67	67	67	40	66	59	52
2	31	32	57	39	67	67	67	67	40	68	59	48
3	38	32	80	39	67	67	67	67	65	68	58	45
4	36	32	80	39	67	67	0	67	66	69	56	45
5	35	32	81	39	67	67	67	67	66	68	56	43
6	34	31	67	39	67	67	67	67	66	68	55	42
7	32	32	56	39	67	67	67	67	66	69	55	43
8	30	32	47	39	67	67	67	67	66	69	52	42
9	30	32	47	62	67	67	67	67	66	69	53	40
10	29	32	44	82	67	67	67	67	66	69	52	40
11	29	33	44	58	66	67	67	62	66	68	51	38
12	30	33	43	58	65	67	67	62	66	68	50	39
13	32	33	43	76	66	67	67	34	66	68	49	38
14	32	33	43	69	66	67	67	30	66	68	48	37
15	32	33	41	62	66	67	67	39	66	68	48	37
16	34	33	41	62	66	67	67	40	66	68	48	36
17	40	33	43	62	67	67	67	40	66	68	49	36
18	40	33	40	62	67	67	67	40	66	68	56	36
19	39	33	40	59	67	67	67	40	66	68	56	35
20	39	33	40	58	67	67	67	0	66	67	53	35
21	38	33	40	69	67	67	67	0	67	67	49	35
22	36	33	40	32	67	67	67	0	67	66	48	35
23	34	33	40	63	67	67	67	0	68	66	47	35
24	34	33	40	62	67	67	67	0	67	67	45	36
25	34	33	40	64	67	67	67	0	67	67	44	37
26	32	33	40	62	67	67	67	0	69	67	43	38
27	33	36	40	62	67	67	67	0	69	68	43	38
28	32	35	39	62	67	67	67	0	68	67	43	37
29	32	34	39	62	.....	67	67	0	69	64	42	36
30	32	34	39	62	.....	67	67	0	66	62	52	37
31	32	.....	39	62	.....	67	.....	0	.....	61	51	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	36	36	54	53	69	73	73	72	67	49	33	24
2	43	35	53	49	72	73	73	72	68	50	32	24
3	50	34	54	57	74	73	74	72	68	49	31	24
4	46	35	53	68	74	73	73	72	68	48	31	24
5	42	35	57	71	74	73	73	72	68	47	31	25
6	41	35	68	70	74	73	73	72	67	45	30	25
7	41	36	62	71	74	73	73	73	67	45	29	24
8	39	36	66	71	73	73	72	72	66	43	29	24
9	37	46	74	72	73	73	73	72	63	42	29	24
10	35	51	74	72	73	73	73	72	63	42	29	23
11	35	47	74	72	74	73	72	72	61	40	29	23
12	35	46	73	72	73	73	72	72	60	41	29	23
13	35	43	74	73	74	73	72	72	61	40	29	23
14	35	53	74	72	65	73	72	72	62	40	29	24
15	35	66	74	72	66	73	72	72	66	39	29	24
16	37	55	74	73	71	73	72	72	66	39	28	24
17	39	52	74	72	73	73	72	72	64	37	28	24
18	39	50	74	72	73	73	72	72	58	38	26	23
19	37	49	74	65	73	73	72	71	56	38	25	22
20	37	47	74	22	73	73	72	71	54	36	26	23
21	37	47	74	70	74	73	72	70	54	37	26	23
22	36	47	74	73	73	73	72	70	55	37	26	21
23	35	46	74	75	73	73	72	70	56	36	26	21
24	34	45	74	70	73	73	71	70	54	35	26	21
25	34	45	74	68	73	73	72	70	52	36	25	22
26	34	62	74	74	73	73	71	70	50	34	25	22
27	34	82	74	69	73	73	72	70	49	35	26	22
28	35	65	74	69	73	73	72	69	50	35	25	22
29	36	59	74	69	.....	73	72	69	50	35	25	22
30	37	56	74	69	.....	73	72	68	50	34	25	22
31	38	.....	75	69	.....	73	.....	68	.....	35	25	.....
1910–11.												
1	23	26	33	33	70	75	70	64	72	71	69	45
2	22	26	32	33	68	75	73	71	72	44	69	46
3	23	29	31	33	69	75	73	71	72	71	69	47
4	23	31	32	33	70	67	74	71	71	71	69	46
5	24	29	32	33	72	71	74	71	71	72	68	48
6	23	28	32	32	72	68	74	71	70	72	68	49
7	22	29	32	32	73	66	74	71	70	72	68	48
8	23	29	32	32	71	71	74	71	72	72	66	46
9	23	29	31	37	72	65	74	71	71	72	65	47
10	23	28	32	44	73	55	74	71	72	72	65	46
11	25	27	32	61	72	58	74	70	72	72	64	44
12	26	27	33	62	72	60	74	70	71	72	61	43
13	26	39	32	64	72	60	74	70	71	72	60	44
14	26	36	32	66	72	61	74	40	72	71	58	43
15	32	36	32	68	72	60	74	70	71	72	59	43
16	32	35	32	70	72	63	74	71	71	72	58	41
17	31	34	32	69	75	64	74	71	72	72	56	41
18	30	34	33	74	75	68	74	72	72	72	56	41
19	27	34	34	75	75	24	74	72	72	72	54	40
20	26	32	36	75	75	73	73	72	72	72	54	40
21	26	32	35	74	73	74	73	54	72	72	54	41
22	26	32	33	74	75	69	73	71	72	72	54	41
23	25	32	33	74	75	69	73	72	71	72	52	42
24	24	31	35	74	75	69	72	72	71	72	52	42
25	24	31	35	74	75	69	72	72	71	72	51	42
26	25	34	34	74	75	72	72	72	71	72	52	42
27	25	34	34	74	75	71	71	72	71	72	52	42
28	24	33	33	74	75	71	72	72	71	70	51	42
29	24	33	33	74	.....	71	71	72	71	70	50	63
30	27	33	32	74	.....	70	72	72	71	70	49	66
31	27	.....	33	74	.....	68	.....	72	.....	70	46	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	67	49	44	48	42	40	75	54	77	61	39	28
2	70	49	43	53	42	42	75	58	77	61	40	28
3	66	45	43	49	41	39	75	59	77	64	39	28
4	60	45	44	48	41	56	75	69	75	69	37	30
5	56	46	45	49	41	72	75	75	77	62	36	31
6	55	47	50	49	40	72	75	77	77	58	34	30
7	52	47	56	48	40	71	75	63	77	57	34	28
8	51	46	49	48	40	74	75	57	77	56	33	29
9	52	47	47	47	41	74	74	60	77	54	32	29
10	51	49	46	47	40	74	74	76	77	53	32	28
11	51	52	46	48	40	75	73	76	77	52	32	27
12	50	51	45	48	40	75	75	76	77	50	32	28
13	48	50	45	47	40	75	75	76	77	49	32	26
14	47	50	46	0	40	75	75	77	77	49	32	25
15	45	49	46	45	38	75	75	77	77	48	31	25
16	44	50	46	45	38	75	75	77	77	48	32	26
17	45	47	48	45	39	75	75	77	77	50	32	25
18	45	46	48	45	38	75	74	77	77	50	34	24
19	45	47	47	45	38	75	74	77	76	48	33	25
20	44	47	47	45	36	75	18	77	75	46	32	24
21	44	47	47	44	36	75	0	77	72	44	30	24
22	44	47	45	44	38	75	0	77	72	43	30	23
23	44	47	46	42	37	75	0	77	73	44	29	23
24	44	46	45	42	36	75	0	77	75	42	28	25
25	44	46	45	42	37	75	0	77	71	42	28	25
26	45	43	45	42	37	75	0	77	69	41	28	24
27	53	44	46	44	37	75	24	77	67	41	27	24
28	55	44	47	44	37	75	37	77	66	40	27	23
29	53	44	54	42	35	75	44	77	63	41	28	23
30	53	44	50	41	.....	75	51	77	63	41	28	23
31	51	.....	48	42	.....	75	.....	77	.....	41	28	.....
1912–13.												
1	24	29	31	29	40	77	77	77	59	39	23	20
2	25	27	30	28	40	77	77	77	59	38	22	21
3	32	28	30	28	40	77	77	77	57	35	20	21
4	37	28	30	28	40	77	77	77	60	35	18	17
5	39	28	30	27	39	77	77	77	62	34	17	16
6	35	28	29	25	40	77	77	77	58	31	17	16
7	34	28	28	25	56	77	77	77	56	31	16	16
8	34	27	28	28	73	77	77	77	54	29	16	17
9	33	28	28	30	73	77	77	77	55	28	17	16
10	32	31	28	32	73	77	77	77	54	27	19	15
11	30	35	28	32	73	77	77	77	53	25	17	15
12	30	32	27	32	73	77	77	77	51	25	17	15
13	30	30	26	32	73	77	77	77	48	26	17	14
14	29	31	26	32	72	77	77	77	46	25	17	14
15	29	30	27	51	70	77	77	76	46	26	17	14
16	28	30	27	68	68	77	77	76	44	24	17	13
17	28	30	29	68	64	77	77	75	44	23	17	13
18	27	30	29	69	64	77	77	74	42	22	17	13
19	27	30	28	68	64	77	77	74	40	22	16	13
20	26	30	29	60	61	77	77	73	39	24	15	13
21	26	28	28	51	59	77	77	73	37	28	16	13
22	26	28	28	47	68	77	77	72	34	27	16	13
23	28	29	29	45	59	77	77	70	35	25	18	14
24	27	28	30	43	77	77	77	68	36	24	16	16
25	26	28	30	42	77	77	77	67	38	24	17	15
26	26	28	29	42	77	77	77	66	42	26	16	14
27	30	28	29	42	77	77	77	66	57	29	17	14
28	32	27	29	42	77	77	77	70	61	26	16	14
29	32	27	29	42	.....	77	77	68	50	26	16	13
30	32	30	29	42	.....	30	77	64	42	25	20	13
31	30	.....	29	41	.....	77	.....	59	.....	24	20	.....

NOTE.—Mar. 30, 1913, water out of canal 6 a. m. to 7 p. m.; mean discharge for day estimated.

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	13	17	36	44	0	0	0	70	80	80	80	51
2	14	20	35	45	40	0	0	68	80	80	80	53
3	14	18	34	44	52	0	40	68	80	80	70	50
4	15	19	33	45	52	0	80	68	80	80	65	50
5	17	19	33	44	52	0	80	80	80	80	65	48
6	17	18	33	42	52	0	68	80	80	80	64	48
7	16	18	33	41	52	0	66	80	80	80	64	48
8	15	17	32	40	56	0	66	80	80	80	63	47
9	15	17	31	40	60	42	68	80	80	80	63	48
10	16	17	32	40	60	70	68	80	80	80	63	47
11	16	17	32	39	60	73	68	80	80	80	62	46
12	15	22	31	38	60	62	68	80	80	80	59	46
13	15	69	31	38	60	68	68	80	80	80	59	47
14	15	64	31	38	67	69	68	80	80	80	59	47
15	15	46	31	60	55	70	68	80	80	80	59	48
16	15	37	32	60	52	70	76	80	80	80	57	46
17	15	33	31	60	27	70	68	80	80	80	57	44
18	14	32	31	60	29	18	68	80	80	80	57	45
19	14	76	31	60	48	0	68	80	80	80	57	45
20	13	76	32	60	0	0	68	80	80	80	57	45
21	14	66	32	60	0	0	68	80	80	80	57	45
22	15	56	36	60	0	0	68	80	80	80	57	45
23	14	48	45	60	0	0	68	80	80	80	54	44
24	14	44	42	60	0	0	68	80	80	80	53	43
25	14	42	41	30	0	0	68	80	80	80	52	42
26	14	41	46	0	0	0	68	80	80	80	51	41
27	14	40	41	0	0	0	68	80	80	80	49	42
28	14	39	40	0	0	0	69	80	80	80	49	42
29	16	38	39	0	.....	0	68	80	80	80	50	41
30	16	38	41	0	.....	0	68	80	80	80	50	41
31	16	.....	47	0	.....	0	.....	80	.....	80	50	.....
1914–15.												
1	43	46	56	66	80	80	90	90	90	90	90	61
2	44	46	58	66	80	80	90	90	90	90	90	58
3	50	43	51	66	80	80	90	90	90	90	90	60
4	51	41	50	70	80	80	90	90	90	90	84	58
5	50	41	51	70	80	80	90	90	90	90	76	56
6	49	40	55	68	80	80	90	90	90	90	76	55
7	50	40	52	65	80	80	90	90	90	90	69	57
8	49	40	51	64	80	80	90	90	90	90	68	58
9	49	41	49	65	80	80	90	90	90	90	68	56
10	47	44	54	64	80	80	90	90	90	90	66	56
11	45	45	67	63	80	80	90	90	90	90	64	56
12	46	44	66	62	80	80	90	90	90	90	62	56
13	43	43	63	61	80	80	90	90	90	90	64	58
14	43	42	58	60	80	80	90	90	90	90	63	60
15	41	42	56	61	80	80	90	90	90	90	62	59
16	40	42	55	60	80	80	90	90	90	90	62	56
17	42	41	75	59	80	80	90	90	90	90	60	55
18	42	39	70	59	80	80	90	90	90	90	58	52
19	43	38	70	59	80	80	90	90	90	90	56	50
20	43	38	68	59	80	80	90	90	90	90	56	51
21	47	38	70	57	80	80	90	90	90	90	55	50
22	48	39	70	59	80	80	90	90	90	90	53	48
23	47	39	70	59	80	80	90	90	90	90	53	48
24	44	39	70	58	80	90	90	90	90	90	53	49
25	43	39	70	70	80	90	90	90	90	90	52	55
26	42	39	70	70	80	90	90	90	90	90	52	57
27	41	39	70	67	80	90	90	71	90	90	55	56
28	40	39	70	70	80	90	70	90	90	90	66	54
29	42	41	70	80	.....	90	70	90	90	90	64	51
30	44	42	70	80	.....	90	70	90	90	90	62	50
31	46	.....	68	80	.....	90	.....	90	.....	90	60	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	48	43	49	63	80	80	80	90	90	90	59	51
2	47	43	48	74	80	80	80	90	90	90	58	48
3	48	43	48	80	80	80	80	90	90	90	61	50
4	47	42	69	80	80	80	80	90	90	90	58	49
5	46	44	67	80	80	80	80	90	90	90	62	49
6	45	54	60	80	80	80	80	90	90	90	61	49
7	45	60	58	80	80	80	80	90	90	84	59	50
8	45	56	58	80	80	80	80	90	90	81	55	48
9	44	57	55	80	80	80	80	90	90	79	62	48
10	45	61	56	80	80	80	80	90	90	79	62	47
11	46	57	55	80	80	80	80	90	90	80	61	47
12	47	58	56	80	80	80	80	45	90	80	60	45
13	47	54	55	80	80	80	80	45	90	80	58	45
14	47	52	72	80	80	80	80	90	90	80	57	44
15	48	52	76	80	80	80	80	90	90	80	60	42
16	48	52	65	80	80	80	80	90	90	80	59	43
17	46	51	62	15.9	80	80	80	90	90	80	61	43
18	46	50	61	.0	80	80	80	90	90	79	61	45
19	45	50	60	80	80	80	80	90	90	77	60	45
20	44	50	59	70	80	80	80	90	90	76	58	47
21	44	49	58	80	80	80	80	90	90	73	60	47
22	44	49	56	80	80	80	80	90	90	72	57	48
23	44	50	56	80	80	80	80	90	90	72	53	49
24	43	49	54	80	80	80	90	90	90	70	57	48
25	43	48	54	80	80	80	90	90	90	70	57	49
26	42	49	53	80	80	80	90	90	90	67	56	49
27	42	49	53	80	80	80	90	90	90	67	55	48
28	42	49	54	52	80	80	90	90	90	67	54	46
29	41	49	53	80	80	80	90	90	90	65	54	44
30	42	49	61	80	.....	80	90	90	90	61	52	54
31	43	.....	62	80	.....	80	.....	90	.....	62	52	.....
1916–17.												
1	82	73	66	90	90	90	90	90	90	60	50	29
2	90	72	67	90	90	90	90	90	90	59	48	27
3	90	72	76	90	90	90	90	90	90	59	44	27
4	90	72	79	90	90	90	90	90	90	58	45	28
5	90	77	73	90	90	90	90	90	90	57	44	27
6	90	75	71	90	90	90	90	90	90	57	43	27
7	90	75	70	84	90	90	90	90	90	56	40	27
8	90	73	70	84	90	90	90	90	90	55	39	27
9	90	72	70	84	90	90	90	90	90	54	38	25
10	90	71	68	84	90	90	90	90	90	52	38	24
11	90	70	67	84	90	90	90	90	90	51	37	24
12	90	71	66	84	90	90	90	90	88	51	37	24
13	90	70	65	84	90	90	90	90	87	50	37	24
14	90	68	64	84	90	90	90	90	84	50	36	24
15	90	68	63	87	90	90	45	90	83	48	34	24
16	90	68	63	90	90	90	45	90	76	46	34	24
17	90	68	65	90	90	90	90	90	74	45	33	24
18	90	67	65	90	90	90	90	90	72	45	33	24
19	90	68	65	90	90	90	90	90	71	43	32	23
20	90	68	65	90	90	90	90	90	70	42	32	24
21	90	67	65	90	90	90	90	90	69	44	32	24
22	90	66	65	90	90	90	90	90	68	42	31	24
23	90	66	62	90	90	90	90	90	67	42	34	27
24	90	66	90	90	90	90	90	90	67	43	32	27
25	85	67	90	90	90	90	90	90	66	44	32	27
26	80	67	90	90	90	90	90	90	67	42	30	27
27	76	66	90	90	90	90	90	90	65	44	30	24
28	78	67	82	90	90	90	90	90	62	76	29	26
29	77	67	87	90	.....	90	90	90	62	57	28	24
30	76	66	90	90	.....	90	90	90	63	57	27	24
31	74	.....	90	90	.....	90	.....	90	.....	51	27	.....

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Daily discharge, in second-feet, of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917-18.												
1	24	24	32	32	35	90	.....	90	90	83	52	42
2	24	24	32	32	34	90	.....	90	90	81	52	41
3	23	24	32	32	34	90	.....	90	90	76	49	39
4	23	24	34	32	33	90	.....	90	80	78	46	40
5	22	26	34	32	32	90	.....	90	90	74	48	39
6	22	37	33	31	32	90	.....	90	90	73	48	35
7	22	40	33	31	34	90	.....	90	90	72	50	37
8	22	36	32	31	33	90	.....	90	90	71	49	36
9	22	34	32	32	32	90	.....	90	90	70	47	36
10	22	33	32	31	32	90	.....	90	90	69	48	35
11	22	32	32	30	32	90	.....	90	90	70	47	34
12	24	32	32	31	31	90	.....	90	90	69	47	34
13	27	32	33	33	31	90	.....	90	90	68	46	34
14	28	32	33	33	32	90	52	90	90	68	48	38
15	29	32	33	33	32	90	90	90	90	65	50	39
16	31	32	32	33	32	90	90	90	90	65	53	41
17	32	32	32	33	32	90	90	90	90	62	51	40
18	31	32	32	33	61	90	90	90	90	61	49	37
19	27	29	32	32	46	90	90	90	90	60	47	37
20	28	29	32	32	64	90	90	90	90	58	47	38
21	27	29	32	32	90	90	90	90	90	57	46	35
22	26	30	32	32	90	90	90	90	90	57	44	38
23	25	31	32	32	90	90	90	90	88	57	42	38
24	24	32	33	32	90	90	90	90	89	57	42	38
25	24	32	33	38	90	90	90	90	88	58	40	37
26	23	32	33	38	90	90	90	90	87	58	39	36
27	24	32	33	36	90	90	90	90	84	55	41	56
28	26	32	33	35	90	90	90	90	82	53	40	55
29	27	32	32	35	.....	90	90	90	83	52	43	48
30	27	32	32	35	.....	90	90	90	81	51	41	43
31	26	.....	32	35	.....	90	.....	90	.....	50	41	.....

NOTE.—No flow Apr. 1-13.

Monthly discharge of Southern California Edison Co.'s canal near Azusa, Calif., for 1896–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1896.				
January	26	26	26	1,599
February	34	26	30	1,726
March	43	35	36	2,214
April	45	40	43	2,559
May	42	29	36	2,214
June	27	13	19	1,131
July	15	9	12	738
August	36	9	14	861
September	19	11	13	774
The period	.....	.....	.....	13,800
1896-97.				
October	17	10	11	676
November	24	15	17	1,012
December	25	10	20	1,230
January	22	13	17.56	1,072
February	20	3	13.10	726
March	21	0	17.14	1,051
April	60	15	35.30	2,102
May	68	55	62.97	3,810
June	71	54	63.20	3,759
July	52	27	38.13	2,343
August	34	22	26.45	1,613
September	23	18	20.66	1,226
The year	71	0	28.5	20,600
1897-98.				
October	26	10	18.03	1,106
November	29	16	23.30	1,385
December	29	25	26.84	1,648
January	32	23	26	1,591
February	34	10	29	1,618
March	48	28	35	2,129
April	37	25.3	33	1,950
May	45	20.0	32	1,947
June	30	14.5	19	1,159
July	14	9	11	672
August	9	5	7	456
September	10	6.1	8	467
The year	48	5	22.3	16,100
1898-99.				
October	10	7.5	9	533
November	11	8	10	580
December	18	11.7	14	832
January	33	15	21.8	1,340
February	27	20	22	1,244
March	40	18	26	1,623
April	28	16	21	1,202
May	17	12	14	842
June	22	5	10	565
July	4	3	4	221
August	6	4	5	295
September	6	3	4	220
The year	40	3	13.4	9,560

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Monthly discharge of Southern California Edison Co.'s canal near Azusa, Calif., for 1898–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1899–1900.				
October	26	4	11.1	683
November	24	10	14.0	847
December	39	16	20	1,247
January	50	22	30	1,845
February	23	18	20	1,111
March	30	16	20	1,230
April	26	13	17	1,012
May	56	16	35	2,152
June	22	8	15	893
July	10	4	6	369
August	5	4	4	246
September	6	3	4	238
The year	56	3	16.3	11,900
1900–1901.				
October	6	4	5	307
November	55	5	14	833
December	53	31	40	1,269
January	90	0	58	3,566
February	70	5	67	3,721
March	70	35	63	3,874
April	84	55	67	3,987
May	72	59	66	4,058
June	66	41	56	3,332
July	41	24	30	1,845
August	27	15	20	1,230
September	20	15	17	1,012
The year	90	0	41.9	29,000
1901–2.				
October	64	0	21	1,291
November	50	29	32	1,904
December	30	26	27	1,660
January	51	24	28	1,722
February	63	27	34	1,888
March	62	55	61	3,750
April	62	46	59	3,510
May	48	30	39	2,398
June	29.5	13.5	20	1,190
July	17	7.5	11	676
August	8.5	6	7	430
September	6	4.5	5	298
The year	64	0	28.7	20,700
1902–3.				
October	10	6	7.1	437
November	62	8	18.9	1,120
December	68	16	31.8	1,960
January	68	22	30.2	1,860
February	74	61	60.6	3,870
March	72	57	70.5	4,330
April	72	0	52.0	3,090
May	70	50	68.6	4,220
June	84	62	74.2	4,420
July	58.5	34.8	43.4	2,670
August	34.8	24.5	28.6	1,760
September	34.5	21	24.6	1,460
The year	84	0	43.1	31,200
1903–4.				
October	31.5	20.5	23.7	1,460
November	25.5	21.5	23.8	1,420
December	25.5	21.5	24.3	1,490
January	28.2	23	24.4	1,500
February	59	0	30.7	1,770
March	66	35	50.8	3,120
April	68	57	65.7	3,910
May	67	37	56.5	3,470
June	38	17.5	25.5	1,520
July	18	11	14.0	861
August	29	9.5	12.9	793
September	13.5	7.5	10.8	643
The year	68	0	30.2	22,000
1904–5.				
October	15.5	9	12.0	738
November	14.5	11	12.8	762
December	48	14.7	16.9	1,040
January	67	18.5	35.2	2,160
February	86	34	67.8	3,770
March	80	0	68.8	4,230
April	80	80	80.0	4,760
May	80	80	80.0	4,920
June	88	0	77.5	4,610
July	86	56	74.2	4,560
August	55	33	42.8	2,630
September	35	28	31.4	1,870
The year	88	0	49.8	36,000
1905–6.				
October	32	27	28.8	1,770
November	97	29	44.7	2,660
December	50	37	40.1	2,470
January	76	0	48.3	2,970
February	76	15	56.5	3,140
March	78	20	69.8	4,290
April	78	52	74.3	4,420
May	76	48	73.8	4,540
June	76	52	73.4	4,370
July	76	76	76.0	4,670
August	76	57	70.5	4,330
September	55	42	47.7	2,840
The year	97	0	58.7	42,500
1906–7.				
October	42	38	39.8	2,450
November	47	37	40.4	2,400
December	76	45	65.5	4,030
January	76	76	76.0	4,670
February	76	76	76.0	4,220
March	76	0	71.1	4,370
April	76	76	76.0	4,520
May	76	76	76.0	4,670
June	76	76	76.0	4,520
July	76	76	76.0	4,670
August	76	76	76.0	4,670
September	76	50	59.6	3,550
The year	76	0	67.3	48,700
1907–8.				
October	76	50	64.0	3,940
November	76	55	63.8	3,800
December	76	53	58.6	3,600
January	76	48	61.0	3,750
February	76	76	76.0	4,370
March	76	76	76.0	4,670
April	76	76	76.0	4,520
May	76	27	74.4	4,570
June	76	49	70.4	4,190
July	48	33	39.8	2,450
August	43	29	35.3	2,170
September	62	26	30.6	1,820
The year	76	26	60.4	43,800
1908–9.				
October	40	29	33.6	2,070
November	36	31	32.9	1,960
December	81	34	46.7	2,870
January	82	39	56.3	3,460
February	67	65	66.7	3,700
March	67	67	67.0	4,120
April	67	0	64.8	3,860
May	67	0	34.1	2,100
June	69	40	64.8	3,860
July	69	61	67.2	4,130
August	59	42	50.7	3,120
September	52	35	39.0	2,330
The year	82	0	51.9	37,600

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Monthly discharge of Southern California Edison Co.'s canal near Azusa, Calif., for 1896–1918—Continued.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1909–10.				
October	50	34	37.5	2,310
November	82	34	48.0	2,860
December	75	53	70.0	4,300
January	75	22	67.5	4,150
February	74	65	72.5	4,030
March	73	73	73.0	4,490
April	74	71	72.3	4,300
May	73	68	71.1	4,370
June	68	49	59.8	3,560
July	50	34	39.9	2,450
August	33	25	27.8	1,710
September	25	21	23.1	1,370
The year	82	21	55.1	39,900
1910–11.				
October	32	22	25.4	1,560
November	39	26	31.4	1,870
December	36	31	32.8	2,020
January	75	32	59.4	3,650
February	75	68	72.9	4,050
March	75	24	66.1	4,060
April	74	70	73.1	4,350
May	72	40	69.5	4,270
June	72	70	71.4	4,250
July	72	44	70.7	4,350
August	69	46	58.7	3,610
September	66	40	45.0	2,680
The year	75	22	56.4	40,700
1911–12.				
October	70	44	50.8	3,120
November	52	43	47.0	2,800
December	56	43	46.7	2,870
January	53	0	44.1	2,710
February	42	35	38.8	2,230
March	75	39	70.6	4,340
April	75	0	53.1	3,160
May	77	54	73.0	4,490
June	77	63	74.2	4,420
July	69	40	49.8	3,060
August	40	27	31.9	1,960
September	31	23	26.0	1,550
The year	77	0	50.6	36,700
1912–13.				
October	39	24	29.8	1,830
November	35	27	29.0	1,730
December	31	26	28.6	1,760
January	69	25	41.0	2,520
February	77	39	63.1	3,500
March	77	30	75.5	4,640
April	77	77	77.0	4,580
May	77	59	73.2	4,500
June	62	34	48.6	2,890
July	39	22	27.5	1,690
August	23	15	17.4	1,070
September	21	13	15.0	893
The year	77	13	43.7	31,600
1913–14.				
October	17	13	14.8	910
November	76	17	36.8	2,190
December	47	31	35.3	2,170
January	60	0	39.0	2,400
February	67	0	33.4	1,850
March	73	0	19.7	1,210
April	80	0	63.5	3,780
May	80	68	78.5	4,830
June	80	80	80.0	4,760
July	80	80	80.0	4,920
August	80	49	59.1	3,630
September	53	41	45.8	2,730
The year	80	0	48.9	35,400
1914–15.				
October	51	40	45.0	2,770
November	46	38	41.0	2,440
December	75	49	62.7	3,860
January	80	57	65.1	4,000
February	80	80	80.0	4,440
March	90	80	82.6	5,080
April	90	70	88.0	5,240
May	90	71	89.4	5,500
June	90	90	90.0	5,360
July	90	90	90.0	5,530
August	90	52	64.8	3,980
September	61	48	54.9	3,270
The year	90	38	71.1	51,500
1915–16.				
October	48	41	45.0	2,770
November	61	42	50.6	3,010
December	76	48	58.2	3,580
January	80	0	73.4	4,510
February	80	80	80.0	4,600
March	80	80	80.0	4,920
April	90	80	82.3	4,900
May	90	45	87.1	5,360
June	90	90	90.0	5,360
July	90	61	77.5	4,770
August	62	52	58.0	3,570
September	54	42	47.2	2,810
The year	90	0	69.1	50,200
1916–17.				
October	90	74	87.0	5,350
November	77	66	69.4	4,130
December	90	62	72.9	4,480
January	90	84	88.4	5,440
February	90	90	90.0	5,000
March	90	90	90.0	5,530
April	90	45	87.0	5,180
May	90	90	90.0	5,530
June	90	62	78.4	4,670
July	76	42	51.0	3,140
August	50	27	35.7	2,200
September	29	32	25.4	1,510
The year	90	23	72.0	52,200
1917–18.				
October	32	22	25.3	1,560
November	40	24	31.0	1,840
December	34	32	32.5	2,000
January	38	30	32.9	2,020
February	90	31	51.6	2,870
March	90	90	90.0	5,530
April	90	0	49.7	2,960
May	90	90	90.0	5,530
June	90	81	88.7	5,280
July	83	50	64.5	3,970
August	53	39	46.2	2,840
September	56	34	39.2	2,330
The year	90	0	53.5	38,700

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TUNNEL DIVERSION NEAR AZUSA, CALIF.

LOCATION.—About on line between secs. 22 and 23, T. 1 N., R. 10 W., at weir box where water is divided between Azusa and Duarte canals, 1,000 feet northeast of Southern California Edison Co.'s power plant, and 1½ miles north of Azusa, Los Angeles County.

RECORDS AVAILABLE.—October 1, 1917, to September 30, 1918. Discharge measurements only, May 31, 1916, to May 28, 1917.

GAGE.—Gage heights are determined by measuring distance to water surface from reference point on north wall of weir box. (See Pl. X, *C*, p. 61.) Read by B. Bunje.

DISCHARGE MEASUREMENTS.—Made by wading near reference point.

CHANNEL AND CONTROL.—Concrete weir box.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to half-tenths daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

The intake of this canal is on San Gabriel River about 600 feet above gaging station of the United States Geological Survey on San Gabriel River near Azusa. Water is used to augment the irrigation supply obtained from the tailrace of the Southern California Edison Co.'s power plant and to provide a supply if the water is shut out of power canal.

Discharge measurements of tunnel diversion near Azusa, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
May 31	J. C. Dort		36	May 28	F. C. Ebert		28
June 5	F. C. Ebert		54	Apr. 7	do	1.36	22
10	J. C. Dort		48	18	H. J. Tompkins		40
30	H. J. Tompkins		16	19	Sopp and Tompkins	1.29	25
July 8	F. C. Ebert		12	May 1	F. C. Ebert	1.24	28
12	J. C. Dort		7.6	10	do	1.15	34
21	F. C. Ebert		1.2	17	C. W. Sopp	1.24	30
Aug. 12	H. J. Tompkins		.7	18	Sopp and Tompkins	.98	48
1917.				24	C. W. Sopp	.95	49
Apr. 7	F. C. Ebert		33	June 5	Ebert and Sopp	1.28	28
25	H. J. Tompkins		36	6	F. C. Ebert	1.37	22
May 17	F. C. Ebert		20	15	do	1.69	8.6
				21	H. J. Tompkins		4.8

Daily discharge, in second-feet, of tunnel diversion near Azusa, Calif., for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	Day.	Apr.	May.	June.	Day.	Apr.	May.	June.
1	0	37	38	11	45	32	14	21	23	35	3
2	0	35	37	12	60	32	12	22	29	38	2
3	15	35	35	13	40	38	12	23	29	42	
4	20	35	32	14	29	38	8.5	24	29	46	
5	20	12	29	15	10	42	8.5	25	29	48	
6	20	29	26	16	7	42	8.5	26	29	49	
7	22	29	20	17	7	49	7	27	29	49	
8	25	29	16	18	35	49	6	28	37	46	
9	25	29	16	19	35	32	5	29	35	46	
10	40	32	14	20	42	35	4	30	35	43	
								31		38	

NOTE.—No flow Oct. 1 to Apr. 2 and June 23 to Sept. 30. Discharge for Apr. 3–6 and 8–12 estimated by observer; June 17–22 interpolated.

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Monthly discharge of tunnel diversion near Azusa, Calif., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
April	60	0	26.7	1,590
May	49	12	37.8	2,320
June	38	0	11.8	702
The year	60	0	6.37	4,610

ROGERS CREEK NEAR AZUSA, CALIF.

LOCATION.—In southwest corner of sec. 14, T. 1 N., R. 10 W., half a mile above mouth of creek, and 2¼ miles north of Azusa, Los Angeles County.

DRAINAGE AREA.—6.4 square miles (measured on topographic map).

RECORDS AVAILABLE.—October 1, 1917, to September 30, 1918. (Discharge measurements only May 8, 1916, to June 11, 1917.)

GAGE.—Stevens water-stage recorder on left bank at mouth of canyon, one-half mile above junction with San Gabriel River. (See Pl. XI, *B*, p. 236.)

DISCHARGE MEASUREMENTS.—Made by wading or from cable about 150 feet below gage.

CHANNEL AND CONTROL.—Boulders, gravel and solid rock; fairly permanent. (See Pl. XIII, *A*.)

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 5.25 feet at 11.30 p. m. March 10 (discharge, 332 second-feet); stream dry October 1 to November 10 and July 20 to September 30.

DIVERSIONS.—None above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent throughout year. Rating curve well defined below 150 second-feet. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph, except March 7, 10, and 11, when hourly discharge was averaged. Records good.

Discharge measurements of Rogers Creek near Azusa, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec-ft.*	1918.		*Feet.*	*Sec.-ft.*
May 8	H. J. Tompkins		2.9	Feb. 25	C. W. Sopp	1.71	8.4
June 10	J. C. Dort		3.0	26	F. C. Ebert	1.70	7.9
29	H. J. Tompkins		.8	Mar. 2	H. J. Tompkins	1.18	1.6
July 12	J. C. Dort		1.2	4	F. C. Ebert	1.11	1.4
Aug. 12	H. J. Tompkins		.4	8	C. W. Sopp	2.37	27
1917.				11	do	3.55	103
Jan. 9	H. J. Tompkins		2.6	15	do	2.32	27
Feb. 15	do		1.6	21	F. C. Ebert	1.90	15
Mar. 15	do		5.9	23	do	1.80	12
Apr. 17	do		3.3	30	do	1.60	7.9
25	do		1.7	Apr. 8	H. J. Tompkins	1.46	5.1
June 11	do		1.1	13	do	1.50	6.1
Dec. 27	E. Tompkins	0.72	.09	19	C. W. Sopp	1.29	3.6
1918.				26	H. J. Tompkins	1.28	3.2
Feb. 19	H. J. Tompkins	.88	.39	May 7	C. W. Sopp	1.18	2.5
22	F. C. Ebert	2.63	43	21	H. J. Tompkins	1.11	2.0
23	do	1.66	7.5	June 6	do	1.00	.9
				21	do	.82	.33
				July 13	do	.72	.13

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Daily discharge, in second-feet, of Rogers Creek near Azusa, Calif., for the year ending September 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1			0.2	0.1	0.1	2.4	7.5	2.3	1.6	0.6		
2			.2	.1	.1	1.8	7.5	2.2	1.4	.4		
3			.1	.1	.1	1.6	7.0	2.1	1.2	.3		
4			.1	.1	.1	1.3	6.5	2.2	1.2	.3		
5			.1	.1	.1	1.5	6.0	2.3	1.2	.2		
6			.1	.05	.1	5	5.5	2.4	1.0	.2		
7			.1	.05	.2	96	5.5	2.3	1.0	.2		
8			.1	.1	.2	32	5.0	2.3	.9	.2		
9			.05	.1	.2	16	4.8	2.3	.8	.1		
10			.05	.1	.1	45	4.8	2.3	.8	.1		
11		0.05	.05	.1	.1	144	4.6	2.1	.8	.1		
12		.1	.05	.1	.1	89	4.6	2.0	.8	1		
13		.3	.05	.1	.1	65	5.5	1.8	.7	.1		
14		.3	.05	.2	.1	41	4.8	1.7	.7	.2		
15		.3	.05	.2	.1	28	4.3	1.8	.6	.2		
16		.3	.05	.1	.1	22	4.1	1.8	.6	.2		
17		.3	.05	.1	.2	19	3.8	1.9	.6	.1		
18		.2	.05	.1	1.2	16	3.3	1.9	.5	.04		
19		2	.05	.1	.4	19	3.0	1.8	.6	.02		
20		.2	.05	.1	.8	17	3.0	1.8	.6			
21		.1	.05	.1	6.4	15	3.0	1.8	.5			
22		.2	.05	.1	28	13	3.0	1.7	.4			
23		.2	.05	.1	8	12	3.0	1.6	.5			
24		.2	.1	.1	3.2	12	3.0	1.7	.6			
25		.2	.1	.2	9	11	3.1	1.7	.5			
26		.2	.1	.2	7.5	10	3.1	1.7	.5			
27		.2	.1	.1	5.5	10	3.0	1.7	.4			
28		.2	.1	.1	3.2	9	2.8	1.8	.4			
29		.2	.1	.1		8.5	2.8	1.8	.4			
30		.2	.1	.1		8	2.6	1.7	.5			
31			.1	.1		7.5		1.6				

Monthly discharge of Rogers Creek near Azusa, Calif., for the year ending September 30, 1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
November	0.3	0.0	0.138	8.21	May	2.4	1.6	1.94	119
December	.2	.05	.062	5.04	June	1.6	.4	.743	44.2
January	.2	.05	.110	6.76	July	.6	.0	.118	7.26
February	28	.1	2.69	149					
March	144	1.3	25.1	1,540	The year	144	.00	2.96	2,140
April	7.5	2.6	4.35	259					

NOTE.—No flow in months for which record is not given.

SAN DIMAS CREEK NEAR SAN DIMAS, CALIF.

LOCATION.—In SW. ¼ NE. ¼ sec. 25, T. 1 N., R. 9 W., at mouth of San Dimas Canyon, 3 miles northeast of San Dimas, Los Angeles County.

DRAINAGE AREA.—18.3 square miles (measured on topographic map).

ELEVATION.—About 1,250 feet above sea level.

RECORDS AVAILABLE.—December 3, 1916, to September 30, 1918. (Discharge measurements only Apr. 14 to Sept. 4, 1916.)

GAGE.—Gurley graph water-stage recorder, on left bank at mouth of canyon, just above concrete control. (See Pl. XII, *A*, p. 237.)

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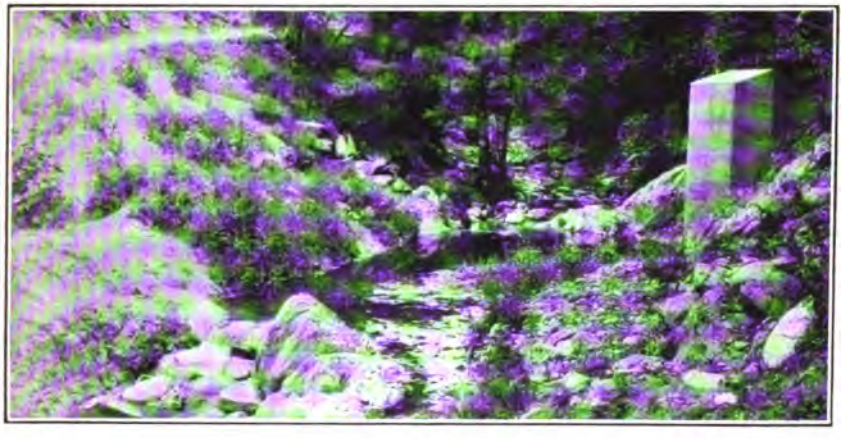
A.



B.

C.

CONCRETE WELL AND HOUSE FOR WATER-STAGE RECORDERS.

A, Rogers Creek near Azusa, Calif.; *B*, Fish Creek near Duarte, Calif.; *C*, Little Santa Anita Creek near Sierra Madre, Calif.

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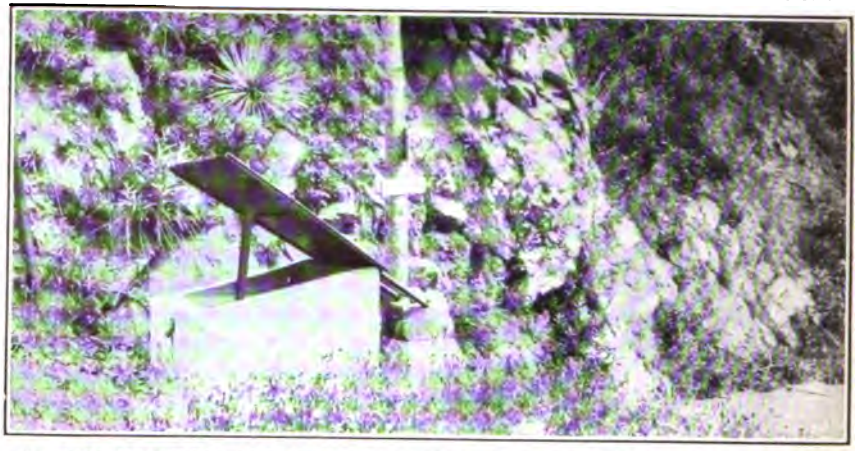

A. CONCRETE WELL AND SHELTER ON SAWPIT CREEK NEAR MONROVIA, CALIF.

B. DOUBLE CONCRETE-BOULDER CONTROL ON EATON CREEK NEAR PASADENA, CALIF.

C. CONCRETE WELL, HOUSE, AND CONTROL ON ARROYO SECO NEAR PASADENA, CALIF.

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Discharge measurements.—Made from cable 50 feet above gage or by wading at various sections above gage.

Channel and Control.—Sand, gravel, and boulders; shifting. Control is low concrete dam built across channel just below gage well. January 18–23, 1918, this dam was raised about 2 feet. Gravel fills in above and below dam affecting stage-discharge relation. Left bank is steep and not subject to overflow; right bank is brushy and will be overflowed during high stages.

Extremes of discharge.—1916–1918: Maximum stage recorded, 4.90 feet at 4 p. m. December 24, 1916 (discharge, 770 second-feet); stream dry during a part of October and November, 1916.

Diversions.—None above. The San Dimas Water Co. diverts water for irrigation 150 feet below gage.

Accuracy.—Stage-discharge relation not permanent, due to deposits of gravel above and below concrete control. Rating curve fairly well defined. There were several short periods when water-stage recorder was not in operation; discharge interpolated. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph, except March 12–18; April 5–17; and May 8 to June 27, 1918 when discharge was computed by shifting-control method. Records good.

Cooperation.—San Dimas Water Co. furnished observer for water-stage recorder.

Discharge measurements of San Dimas Creek near San Dimas, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Apr. 14	H. J. Tompkins		17	Sept. 18	H. J. Tompkins	.62	.21
26	do		13	Oct. 22	do	.68	.37
May 13	J. C. Dort		10	Dec. 7	do	.76	1.5
31	do		9.1	1918.			
June 16	do		5.6	Jan. 21	C. W. Sopp		1.4
27	H. J. Tompkins		4.4	25	E. Tompkins	2.53	2.4
July 12	J. C. Dort		4.7	Feb. 18	C. W. Sopp	2.68	3.3
Aug. 12	H. J. Tompkins		1.5	21	F. C. Ebert	3.05	7.1
Sept. 4	J. C. Dort		1.9	22	do	3.85	31
Oct. 11	do		5.2	23	do	3.10	9.7
Dec. 16	do	1.04	3.6	25	C. W. Sopp	2.95	6.9
30	do	1.80	8.6	Mar. 7	do	4.90	302
1917.				15	H. J. Tompkins	3.80	25
Jan. 20	J. C. Dort	1.94	18	18	C. W. Sopp	3.22	17
Feb. 15	H. J. Tompkins	1.64	5.0	20	F. C. Ebert	3.32	15
20	J. C. Dort	1.74	12	22	do	3.15	12
22	do	2.27	81	29	do	2.90	6.8
24	H. J. Tompkins	1.83	21	Apr. 4	C. W. Sopp	2.88	6.8
28	do	1.80	22	8	H. J. Tompkins	2.76	4.1
Mar. 7	J. C. Dort	1.74	11	18	C. W. Sopp	2.71	4.0
12	do	1.74	10	May 7	do	2.67	3.8
17	H. J. Tompkins	1.72	8.9	17	do	2.66	2.9
Apr. 5	do	1.66	6.0	28	do	2.68	2.8
19	J. C. Dort	1.19	5.7	June 28	do	2.30	.7
26	H. J. Tompkins	1.15	5.5	July 19	do	2.20	.14
May 9	do	1.20	5.8	26	H. J. Tompkins	2.20	.19
27	do	1.18	5.8	Sept. 4	Ellsworth and Ebert	2.18	a.1
July 12	do	.82	.97				
29	do	.78	.75				

a Estimated.

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Daily discharge, in second-feet, of San Dimas Creek near San Dimas, Calif., for 1916–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	.....	.....	.....	8.5	6	16	6.5	6	5	1.4	0.7	0.3
2	.....	.....	.....	8.5	6	13	6.5	5.5	4.8	1.3	.7	.3
3	.....	.....	5	11	5.5	11	6.5	5.5	4.6	1.1	.7	.3
4	.....	.....	4.2	10	5.5	11	6.5	5.5	4.6	1.2	.7	.3
5	.....	.....	3.7	8.5	5.5	11	6.5	4.6	4.6	1.3	.6	.3
6	.....	.....	3.7	8.5	5.5	11	6.5	4.3	4.6	1.4	.6	.3
7	.....	.....	3.6	8.5	5.5	11	6.5	4.3	4.5	1.4	.6	.3
8	.....	.....	3.6	8.5	5.5	11	a6.5	5.5	4.0	1.2	.6	.3
9	.....	.....	3.6	8.5	5.5	12	6.5	6.5	3.7	1.1	.5	.3
10	.....	.....	3.6	8.5	5.5	11	6.5	6.5	a3.7	1.1	.4	.4
11	.....	.....	3.5	8.5	5.5	11	6	5.5	a3.7	1.1	a.4	.4
12	.....	.....	3.5	8.5	4.9	11	6	4.3	3.7	1.1	a.4	.4
13	.....	.....	3.5	8.5	4.9	11	6	4.3	3.5	1.1	.4	.3
14	.....	.....	3.5	8.5	4.9	11	6	4.8	3.2	1.1	.4	.3
15	.....	.....	3.5	9	4.9	10	6	4.8	2.9	1.0	.4	a.3
16	.....	.....	3.5	10	4.9	10	8	4.8	2.4	.9	.4	a.3
17	.....	.....	3.5	8.5	13	9	7	4.6	1.8	.8	.4	a.2
18	.....	.....	3.5	9	8.5	8.5	6.5	13	1.6	.8	.3	.2
19	.....	.....	3.5	24	7	8.5	6	12	1.5	.8	.3	a.2
20	.....	.....	3.5	20	13	7.5	5.5	8.5	1.5	a.8	.3	a.2
21	.....	.....	3.5	15	18	7.5	5	7	1.5	a.8	.3	a.3
22	.....	.....	3.5	14	58	7	5.5	6	1.5	a.8	.3	a.3
23	.....	.....	3.7	12	31	7	5.5	7.5	1.6	a.8	.3	a.3
24	.....	.....	250	14	24	6.5	5	8	1.7	a.8	.3	a.3
25	.....	.....	73	13	36	6.5	4.6	8	1.7	a.8	a.3	a.3
26	.....	.....	23	11	29	6.5	5	7.5	1.7	a.8	a.3	a.3
27	.....	.....	20	7	25	6.5	6	5.5	1.7	a.8	a.3	a.3
28	.....	.....	15	7	19	6.5	8	5.5	1.6	.8	a.3	a.2
29	.....	.....	8.5	6.5	.....	6.5	a7.5	5.5	1.5	.8	a.3	a.2
30	.....	.....	8.5	6.5	.....	6.5	7	6.5	1.4	.7	a.3	a.2
31	.....	.....	8.5	6.5	.....	6.5	.....	6.5	.....	.7	a.3	.....

a No gage-height record; discharge interpolated.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	0.2	0.3	1.3	1.7	1.7	4.0	7	3.5	3.0	0.6	0.2	0.1
2	.2	.3	1.3	1.7	1.7	3.8	7	3.1	2.8	.6	.2	.1
3	.2	.3	1.4	1.7	1.7	3.4	6.5	2.9	2.7	.6	.2	.1
4	.2	.3	1.4	1.7	1.6	3.1	6.5	3.0	2.5	.6	.2	.1
5	.2	.4	1.4	1.7	1.5	3.4	5.5	3.4	2.3	.5	.2	.1
6	.2	.9	1.4	1.7	1.5	9.5	5	3.5	2.1	.5	.2	.1
7	.2	.9	1.5	1.7	1.9	142	4.7	3.5	1.9	.5	.2	.1
8	.2	.8	1.4	1.7	1.8	54	4.4	3.8	1.8	.5	.2	.1
9	.2	.8	1.4	1.7	1.7	31	4.3	3.8	1.7	.4	.2	.1
10	.2	.8	1.5	1.7	1.7	37	4.4	3.6	1.7	.4	.2	.1
11	.3	.8	1.5	1.7	1.4	104	4.8	3.4	1.8	.4	.2	.1
12	.3	.7	1.5	1.7	1.4	80	4.9	3.2	1.7	.4	.2	.1
13	.3	.6	1.6	1.8	1.5	50	6	2.7	1.6	.3	.2	.1
14	.3	.6	1.7	1.8	1.5	31	5.5	2.6	1.5	.3	.2	.2
15	.4	.6	1.7	1.8	1.5	24	5	2.8	1.5	.3	.3	.2
16	.4	.6	1.7	1.8	1.5	25	4.8	2.9	1.5	.3	.3	.2
17	.4	.5	1.7	1.9	1.9	22	4.6	2.9	1.4	.2	.4	.2
18	.3	.6	1.6	1.8	3.5	18	4.1	2.7	1.3	.2	.3	.2
19	.3	.7	1.5	1.6	2.5	20	3.8	2.7	1.3	.2	.2	.1
20	.3	.8	1.5	1.5	2.6	18	3.8	2.8	1.2	.2	.2	.2
21	.3	.8	1.6	1.4	7	14	3.8	2.8	1.1	.2	.2	.3
22	.3	1.0	1.7	1.6	29	12	4.0	2.8	1.0	.2	.2	.3
23	.3	1.1	1.7	1.8	12	11	4.2	2.7	1.0	.2	.2	.3
24	.3	1.3	1.7	2.1	6	11	4.7	2.6	.9	.2	.2	.4
25	.3	1.3	1.7	2.4	8	9.5	5	2.6	.8	.2	.2	.4
26	.3	1.3	1.7	1.9	10	9	5.5	2.6	.8	.2	.2	.5
27	.3	1.3	1.7	1.8	7.5	8.5	5.5	2.6	.7	.2	.2	.5
28	.3	1.3	1.7	1.7	5.5	8	4.8	3.1	.7	.2	.1	.6
29	.3	1.3	1.7	1.6	.....	7.5	4.0	3.5	.7	.2	.1	.6
30	.3	1.2	1.7	1.6	.....	6.5	3.7	3.4	.7	.2	.1	.6
31	.3	.....	1.7	1.7	.....	6.5	.....	3.2	.....	.2	.1	.....

NOTE.—No gage-height record Oct. 1–10, 14–21, 28–31; Nov. 1, 2, 11; Jan. 18–25; May 9–10, 19–21, 30, 31; June 1–7, 16–31; July 1–18; Aug. 3, 4, 25–30; and Sept. 15–17, 29–30—discharge estimated.

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Monthly discharge of San Dimas Creek near San Dimas, Calif., for 1916-1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916-17.					1917-18.				
December, 3-31	250	3.5	16.7	961	October	0.4	0.2	.28	17.2
January	24	6.5	10.2	627	November	1.3	.3	.81	48.2
February	58	4.9	13.1	728	December	1.7	1.3	1.57	96.5
March	16	6.5	9.32	573	January	2.4	1.4	1.74	107
April	8	4.6	6.24	371	February	29	1.4	4.32	240
May	13	4.3	6.27	386	March	142	3.1	25.4	1,560
June	5	1.4	2.86	170	April	7	3.7	4.93	293
July	1.4	.7	.99	60.9	May	3.8	2.6	3.05	188
August	.7	.3	.42	25.8	June	3.0	.7	1.52	90.4
September	.4	.2	.29	17.3	July	.6	.2	.33	20.3
					August	.4	.1	.20	12.3
The period				3,920	September	.6	.1	.24	14.3
					The year	142	.1	3.71	2,690

FISH CREEK NEAR DUARTE, CALIF.

LOCATION.—In SW. ¼ SW. ¼ sec. 15, T. 1 N., R. 10 W., about three-fourths mile above mouth of canyon and 4 miles northeast of Duarte, Los Angeles County.

DRAINAGE AREA.—6.5 square miles (measured on topographic map).

ELEVATION.—About 1,000 feet above sea level.

RECORDS AVAILABLE.—July 23 to September 30, 1916, and July 28, 1917 to September 30, 1918.

GAGE.—Gurley graph water-stage recorder, installed July 28, 1917, on left bank three-fourths mile above mouth of canyon, at same site and datum as vertical staff. (See Pl. XIII, *B*, p. 422.)

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Gravel and boulders; apparently permanent. Both banks are high and not subject to overflow. A concrete control has been built at an outcrop of bedrock a short distance below gage.

EXTREMES OF DISCHARGE.—1916-1918: Maximum stage recorded 4.50 feet at 4 p. m. March 10, 1918 (discharge, 330 second feet); minimum stage, 1.59 feet September 12 and 13, 1918 (discharge, 0.1 second-foot.).

DIVERSIONS.—None above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent on account of changes in control. Rating curves fairly well defined. Staff gage read to hundredths once daily in 1916. Daily discharge ascertained by applying to the rating table mean daily gage height obtained by inspecting recorder graph or from staff records. Records good.

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Discharge measurements of Fish Creek near Duarte, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec-ft.*	1917.		*Feet.*	*Sec.-ft.*
Apr. 12	H. J. Tompkins		10	Dec. 19	E. Tompkins	1.78	0.5
24	do		7.2	1918.			
May 2	do		6.2	Jan. 18	Ebert and Sopp	1.82	.65
19	J. C. Dort		6.4	Feb. 7	H. J. Tompkins	1.86	.75
June 10	do		2.7	21	F. C. Ebert	2.71	21
28	H. J. Tompkins	0.87	3.0	23	do	2.37	8.4
July 14	J. C. Dort	.86	1.6	25	H. J. Tompkins	2.48	14
Oct. 25	H. J. Tompkins	.80	1.8	Mar. 6	C. W. Sopp	2.28	6.9
Dec. 5	do	.89	2.4	7	do	4.00	231
1917.				20	F. C. Ebert	2.52	18
Jan. 9	H. J. Tompkins	1.02	4.4	21	C. W. Sopp	2.48	15
Feb. 15	do	.90	2.8	29	F. C. Ebert	2.26	7.2
28	do	1.70	21	30	H. J. Tompkins	2.22	7.0
Mar. 15	do	1.18	8.6	Apr. 4	C. W. Sopp	2.22	5.3
Apr. 17	do	1.06	5.6	18	do	2.11	4.0
25	do	.94	3.7	May 3	do	2.03	2.3
May 26	do	.96	3.2	21	do	2.00	1.9
June 11	do	.88	2.3	June 7	do	1.92	1.4
July 28	do	.53	.3	21	H. J. Tompkins	1.82	.42
Oct. 15	E. Tompkins	1.74	.35	July 13	do	1.72	.16
Nov. 8	H. J. Tompkins	1.82	.65	27	do	1.70	.15

Daily discharge, in second-feet, of Fish Creek near Duarte, Calif., for 1916–1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1916.				1916.				1917.			
1		[a] 1.0	[a] 0.8	21		1.3	0.9	11		0.3	0.2
2		.9	.9	22		[a] 1.2	[a] 1.0	12		.3	.2
3		.9	.9	23	1.6	1.0	1.2	13		.3	.2
4		[a] 1.0	.9	24	[a] 1.6	.9	1.2	14		.2	.2
5		1.2	[a] 1.0	25	[a] 1.5	[a] .9	1.1	15		.2	.2
6		1.1	1.0	26	1.5	.9	[a] 1.2	16		.2	.2
7		1.0	1.0	27	[a] 1.4	.9	1.2	17		.2	.2
8		[a] 1.0	[a] 1.0	28	[a] 1.3	.9	.9	18		.2	.2
9		1.0	.9	29	1.2	[a] .9	[b] .8	19		.2	.2
10		1.2	1.0	30	1.2	.9	[b] 1.5	20		.2	.2
11		[a] 1.2	1.0	31	1.1	.8		21		.2	.2
12		1.1	[a] .9	1917.				22		.2	.2
13		1.1	.8	1		.3	.2	23		.2	.2
14		1.2	.8	2		.3	.2	24		.2	.2
15		[a] 1.3	[a] .8	3		.3	.2	25		.2	.2
16		1.4	.8	4		.2	.2	26		.2	.2
17		1.4	.8	5		.2	.2	27		.2	.2
18		[a] 1.4	.9	6		.2	.2	28	0.3	.2	.2
19		1.5	[a] .8	7		.2	.2	29	.3	.2	.2
20		1.4	.8	8		.2	.2	30	.3	.2	.2
				9		.2	.2	31	.3	.2	
				10		.2	.2				

[a] No gage-height record; discharge interpolated.
[b] No gage-height record; discharge estimated from rainfall records; values approximate.

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Daily discharge, in second-feet, of Fish Creek near Duarte, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	0.2	0.2	0.6	0.4	0.6	4.1	6.5	2.4	1.7	0.6	0.1	0.1
2	.2	.1	.6	.4	.6	3.2	6.5	2.0	1.6	.6	.1	.1
3	.2	.1	.7	.4	.6	3.0	6.5	2.0	1.4	.3	.1	.1
4	.2	.1	.7	.4	.6	2.6	6.5	1.9	1.5	.3	.1	.1
5	.2	.2	.7	.4	.6	3.1	6	2.2	1.4	.2	.1	.1
6	.2	1.3	.6	.5	.6	7.5	6	2.4	1.3	.2	.1	.1
7	.2	.8	.6	.5	1.0	151	5.5	2.2	1.1	.2	.1	.1
8	.2	.6	.6	.5	.9	43	5.5	2.2	1.1	.2	.1	.1
9	.3	.6	.6	.6	.8	20	5	2.2	1.0	.2	.1	.1
10	.3	.6	.6	.7	.7	84	4.9	2.0	1.0	.2	.1	.1
11	.3	.5	.6	.7	.6	193	4.7	2.0	1.0	.1	.1	.1
12	.3	.5	.6	.6	.6	137	4.5	2.0	.8	.2	.1	.1
13	.3	.5	.5	.5	.6	98	4.3	2.0	.7	.3	.1	.1
14	.3	.5	.5	.6	.7	47	4.1	2.0	.7	.4	.1	.1
15	.3	.5	.5	.6	.7	34	3.8	2.0	.7	.4	.1	.1
16	.4	.5	.5	.6	.7	23	3.6	2.0	.7	.3	.2	.1
17	.4	.5	.5	.6	1.3	19	3.4	2.0	.6	.2	.2	.1
18	.4	.5	.5	.6	2.9	16	3.4	1.9	.5	.1	.2	.2
19	.2	.5	.5	.6	1.3	24	3.2	1.9	.5	.1	.2	.2
20	.2	.5	.5	.5	2.3	18	3.2	1.9	.6	.1	.1	.3
21	.1	.5	.5	.5	10	16	3.2	1.9	.7	.1	.1	.3
22	.1	.5	.5	.5	85	12	3.2	1.9	.5	.1	.1	.2
23	.1	.5	.5	.5	13	12	3.4	1.7	.5	.1	.1	.2
24	.1	.5	.5	.5	6.5	10	3.4	1.8	.6	.1	.1	.2
25	.1	.6	.5	.6	17	9.5	3.2	1.8	.7	.1	.1	.2
26	.1	.7	.5	.7	11	9	3.4	1.8	.7	.1	.1	.1
27	.2	.7	.4	.7	7	8.5	3.1	1.9	.5	.2	.1	.2
28	.2	.6	.4	.6	5.5	8	3.0	1.9	.5	.1	.1	.3
29	.3	.6	.4	.6	.....	7.5	2.8	1.9	.5	.1	.1	.2
30	.3	.6	.4	.6	.....	7	2.6	1.8	.5	.1	.1	.2
31	.3	.....	.4	.6	.....	6.5	.....	1.7	.....	.1	.1	.....

NOTE.—No gage-height record Oct. 4–14 and Dec. 9; discharge interpolated. Indirect method for shifting control used Feb. 21.

Monthly discharge of Fish Creek near Duarte, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916.					1917–18.				
July 23–31	1.6	1.1	1.38	25	October	0.4	0.1	0.23	14.1
August	1.5	.8	1.09	67	November	1.3	.1	.51	30.3
September	1.5	.8	.96	57	December	.7	.4	.53	32.6
					January	.7	.4	.55	33.8
The period	.....	.....	.....	149	February	85	.6	6.20	344
					March	193	2.6	33.4	2,050
1917.					April	6.5	2.6	4.28	255
July 28–31	0.3	0.3	0.30	2.4	May	2.4	1.7	1.98	122
August	.3	.2	.21	12.9	June	1.7	.5	.85	50.6
September	.2	.2	.20	11.9	July	.6	.1	.21	12.9
					August	.2	.1	.11	6.8
The period	.....	.....	.....	27.2	September	.3	.1	.15	8.9
					The year	193	.1	4.10	2,960

SAWPIT CREEK NEAR MONROVIA, CALIF.

LOCATION.—In SE. ¼ NW. ¼ sec. 13, T. 1 N., R. 11 W., at highway bridge just below junction of two main branches, about 2 miles north of Monrovia, Los Angeles County.

DRAINAGE AREA.—5.3 square miles (measured on topographic map).

ELEVATION.—About 1,050 feet above sea level.

RECORDS AVAILABLE.—November 8, 1916, to September 30, 1918.

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GAGE.—Gurley graph water-stage recorder, with concrete well and shelter, on left bank at east end of highway bridge. (See Pl. XIV, *A*.)

DISCHARGE MEASUREMENTS.—Made from bridge or by wading near gage.

CHANNEL AND CONTROL.—Coarse gravel and boulders; apparently permanent. Channel is straight for 25 feet above gage and curved below; both banks are high. A concrete boulder dam was built across channel just below gage for an artificial control. Lowest point in this control is at elevation 0.70 foot on gage.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage recorded by water-stage recorder, 2.65 feet at midnight March 10–11, 1918 (discharge from extension of rating curve, 256 second-feet); stream dry for several months each year.

DIVERSIONS.—Part of the water supply for Monrovia is obtained from the two branches of Sawpit Creek above gage. (See record for Monrovia pipe line near Monrovia, Calif., p. 43.)

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. A fairly well-defined rating curve, averaging all measurements obtained at this station, was used throughout 1918. The curve for 1917 was fairly well defined. Daily discharge ascertained by applying to the rating table mean daily gage heights determined by inspecting recorder graph, except for December 24, 1916, and March 7, 10, and 11, 1918, when hourly discharge was averaged. Records for 1917 fair; for 1918 good.

COOPERATION.—City of Monrovia furnished observer for water-stage recorder.

Discharge measurements of Sawpit Creek near Monrovia, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
Dec. 30	J. C. Dort	1.05	2.6	Feb. 25	F. C. Ebert	1.02	1.5
1917.				Mar. 11	E. Tompkins	1.74	54
Jan. 20	J. C. Dort	1.16	6.4	15	C. W. Sopp	1.20	7.0
Feb. 15	H. J. Tompkins	.96	1.4	20	F. C. Ebert	1.20	5.6
20	J. C. Dort	1.05	3.4	29	do	1.05	1.6
22	do	1.75	46	Apr. 4	C. W. Sopp	1.07	2.3
22	do	1.75	45				
24	do	1.32	9.5				
Mar. 15	H. J. Tompkins	1.08	3.6				
28	do	1.03	2.3				

Daily discharge, in second-feet, of Sawpit Creek near Monrovia, Calif., for 1916–1918.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1916–17.							1916–17.						
1	.....	0.9	3.0	2.5	8.5	2.1	16	1.3	2.1	3.0	1.7	3.4	.0
2	.....	1.1	3.4	2.5	8	2.1	17	1.1	2.1	2.9	2.5	3.2	1.4
3	.....	3.2	4.0	2.5	6.5	2.0	18	.9	2.1	3.2	2.3	3.2	2.1
4	.....	3.0	3.4	2.5	6	1.5	19	1.1	2.1	5	2.3	3.0	2.1
5	.....	2.7	3.0	2.5	5.5	.8	20	1.0	2.1	5.5	3.8	3.0	.7
6	.....	2.3	2.9	2.5	4.8	.2	21	.8	2.1	4.5	14	3.0	.....
7	.....	2.1	2.9	2.5	4.0	.0	22	.8	2.1	4.0	36	3.0	.....
8	2.1	2.1	2.9	2.3	3.6	.0	23	.9	2.5	3.8	17	2.9	.....
9	2.1	2.1	2.9	1.5	4.0	.0	24	.9	74	3.6	12	2.9	.....
10	2.1	2.1	2.7	1.5	4.2	.0	25	.9	14	3.4	17	2.9	.....
11	2.1	2.1	2.5	1.5	4.0	.0	26	1.0	6.5	3.2	14	2.9	.....
12	2.1	2.1	2.7	1.6	4.0	.0	27	1.0	4.5	2.9	10	2.7	.....
13	2.1	2.1	2.5	1.6	4.0	.0	28	.9	4.0	2.9	9.5	2.7	.....
14	2.1	2.1	2.5	1.6	3.8	.0	29	.9	4.0	2.7	.....	2.5	.....
15	1.6	2.1	2.9	1.5	3.6	.0	30	.9	3.0	2.7	.....	2.3	.....
							31	.....	3.0	2.7	.....	2.1	.....

NOTE.—No flow Apr. 21 to Sept. 30.

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Daily discharge, in second-feet, of Sawpit Creek near Monrovia, Calif., for 1916–1918.

Day.	Feb.	Mar.	Apr.	Day.	Feb.	Mar.	Apr.	Day.	Feb.	Mar.	Apr.
1918.				1918.				1918.			
1		1.4	3.2	11		88	.4	21		5	
2		1.4	3.4	12		34	.4	22	8.2	4.6	
3		1.4	3.2	13		21	1.8	23	2.5	3.7	
4		1.4	2.9	14		12	2.0	24	2.1	3.4	
5		1.4	2.5	15		9	1.8	25	2.9	3.4	
6		2.1	2.3	16		8.5	.8	26	1.5	3.2	
7		49	2.3	17		8.5	.05	27	1.4	3.0	
8		14	2.1	18		8	.03	28	1.6	2.9	
9		7	1.1	19		8	.04	29		2.5	
10		22	.4	20		6.5		30		2.7	
								31		2.9	

NOTE.—No flow Oct. 1 to Feb. 21 and Apr. 20 to Sept. 30.

Monthly discharge of Sawpit Creek near Monrovia, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916–17.					1917–18.				
November 8–30	2.1	0.8	1.33	60.7	February	8.2	.00	.721	40.0
December	74	.9	5.24	322	March	88	1.4	11.0	676
January	5.5	2.5	3.23	199	April	3.4	.00	1.02	60.7
February	36	1.5	6.17	343					
March	8.5	2.1	3.88	239	The year	88	.00	1.08	777
April	2.1	.0	.50	29.8					
The period				1,190					

NOTE.—No flow May to December, 1917, January, 1918, and May to September, 1918. Record for 1917–18 represents full year.

Combined daily discharge, in second-feet, of Sawpit Creek and Monrovia pipe line near Monrovia, Calif., for 1916–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1			3.1	4.5	4.0	10	4.5	3.4	3.1	2.0	1.8	1.7
2			3.3	4.9	4.0	9.5	4.7	3.4	3.1	2.0	1.8	1.6
3			5.5	5.5	4.0	8	5	3.4	3.1	2.0	1.8	1.6
4			4.7	4.9	4.0	7.5	4.9	3.4	3.1	2.0	1.8	1.6
5			4.4	4.5	4.0	7	4.5	3.1	3.1	2.0	1.8	1.6
6			4.0	4.4	4.0	6.5	3.8	3.1	3.0	2.0	1.8	1.6
7			3.8	4.4	4.0	5.5	3.4	3.1	2.8	2.0	1.8	1.6
8		3.8	3.8	4.4	4.0	5.5	3.6	3.4	2.8	2.0	1.8	1.6
9		3.8	3.8	4.4	3.6	6	3.9	3.6	2.8	2.0	1.7	1.6
10		3.8	3.8	4.2	3.7	6	3.7	3.4	2.8	2.0	1.7	1.6
11		3.8	3.8	4.0	3.7	5.5	3.4	3.1	2.8	2.0	1.7	1.6
12		3.8	3.8	4.2	3.8	5.5	3.4	3.1	2.7	1.9	1.7	1.6
13		3.8	3.8	4.0	3.8	5.5	3.4	3.1	2.6	1.9	1.7	1.6
14		3.8	3.8	4.0	3.8	5.5	3.4	3.1	2.5	1.9	1.7	1.6
15		3.5	3.8	4.4	3.6	5.5	3.4	3.0	2.5	1.9	1.7	1.6
16		3.5	3.8	4.5	3.5	5	4.0	2.8	2.4	1.9	1.7	1.6
17		3.3	3.8	4.4	4.0	4.9	4.2	3.1	2.4	1.9	1.7	1.6
18		3.1	3.8	4.7	3.8	4.9	4.2	3.4	2.4	1.9	1.7	1.6
19		3.3	3.8	6.5	3.8	4.7	4.2	3.9	2.2	1.9	1.7	1.6
20		3.2	3.8	7	5.5	4.7	3.3	3.7	2.4	1.9	1.7	1.5
21		3.0	3.8	6	16	4.7	3.1	3.4	2.2	1.9	1.7	1.5
22		3.0	3.8	5.5	38	4.7	3.7	3.4	2.2	1.9	1.7	1.5
23		3.1	4.2	5.5	19	4.6	3.9	3.4	2.2	1.9	1.7	1.5
24		3.1	76	5	14	4.6	3.6	3.4	2.2	1.9	1.7	1.5
25		3.1	16	5	19	4.6	3.4	3.4	2.2	1.9	1.7	1.5
26		3.2	8	4.8	16	4.6	3.7	3.4	2.2	1.9	1.7	1.6
27		3.2	6	4.5	12	4.4	4.0	2.7	2.2	1.8	1.7	1.6
28		3.1	5.5	4.4	11	4.4	4.6	2.6	2.1	1.8	1.7	1.5
29		3.1	5.5	4.2		4.2	4.0	2.7	2.1	1.8	1.7	1.5
30		3.1	4.5	4.2		4.3	3.7	2.7	2.1	1.8	1.7	1.5
31			4.5	4.2		4.5		2.8		1.8	1.7	

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Combined daily discharge, in second-feet, of Sawpit Creek and Monrovia pipe line near Monrovia, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	1.4	1.5	1.6	1.5	1.6	3.0	5.5	2.7	2.1	1.7	1.3	1.2
2	1.4	1.5	1.6	1.5	1.6	3.0	5.5	2.7	2.1	1.6	1.3	1.2
3	1.4	1.5	1.6	1.5	1.6	3.0	5.5	2.7	2.1	1.6	1.3	1.2
4	1.4	1.5	1.6	1.5	1.6	2.9	4.9	2.7	2.1	1.5	1.3	1.2
5	1.4	1.5	1.6	1.5	1.6	2.9	4.5	2.6	2.1	1.5	1.3	1.2
6	1.4	1.9	1.6	1.5	1.6	4.0	4.4	2.6	2.0	1.5	1.3	1.2
7	1.4	1.7	1.6	1.5	1.6	51	4.7	2.6	2.0	1.5	1.3	1.2
8	1.4	1.7	1.6	1.5	1.6	15	4.5	2.6	1.9	1.5	1.3	1.2
9	1.4	1.6	1.6	1.5	1.6	8	3.9	2.6	1.9	1.5	1.3	1.2
10	1.4	1.6	1.6	1.5	1.6	23	3.7	2.6	1.9	1.4	1.3	1.2
11	1.4	1.5	1.6	1.5	1.6	89	3.7	2.6	2.1	1.4	1.3	1.2
12	1.4	1.6	1.6	1.5	1.6	35	3.7	2.4	2.1	1.4	1.3	1.2
13	1.5	1.6	1.6	1.5	1.6	22	4.4	2.4	1.9	1.4	1.3	1.2
14	1.6	1.6	1.6	1.5	1.5	13	4.1	2.4	1.9	1.4	1.3	1.5
15	1.6	1.6	1.6	1.5	1.5	11	3.9	2.4	1.8	1.4	1.4	1.4
16	1.7	1.6	1.6	1.5	1.5	12	3.4	2.7	1.8	1.4	1.4	1.4
17	1.7	1.6	1.6	1.5	1.5	12	3.0	2.6	1.8	1.4	1.4	1.4
18	1.5	1.6	1.6	1.5	1.9	11	3.0	2.5	1.7	1.4	1.4	1.3
19	1.5	1.6	1.6	1.5	1.6	11	2.8	2.4	1.7	1.4	1.4	1.3
20	1.5	1.6	1.6	1.5	1.8	8	2.8	2.4	1.7	1.4	1.4	1.3
21	1.5	1.6	1.6	1.5	1.9	6.5	2.8	2.4	1.7	1.4	1.4	1.3
22	1.5	1.6	1.6	1.5	10	6.5	2.8	2.4	1.7	1.4	1.3	1.3
23	1.5	1.6	1.5	1.5	4.0	6	2.8	2.4	1.7	1.4	1.3	1.3
24	1.5	1.6	1.5	1.5	3.4	6.5	3.3	2.4	1.7	1.4	1.3	1.3
25	1.5	1.6	1.5	1.5	5	6.5	3.1	2.1	1.7	1.4	1.3	1.3
26	1.5	1.6	1.5	1.5	3.7	6	3.1	2.1	1.7	1.4	1.2	1.3
27	1.5	1.6	1.5	1.5	3.0	5.5	3.1	2.1	1.7	1.4	1.2	1.5
28	1.5	1.6	1.5	1.5	3.2	5.5	2.8	2.1	1.6	1.4	1.2	1.4
29	1.5	1.6	1.5	1.5	.....	5.5	2.8	2.4	1.6	1.4	1.2	1.3
30	1.5	1.6	1.5	1.6	.....	5.5	2.8	2.1	1.6	1.4	1.2	1.3
31	1.5	.....	1.5	1.6	.....	5.5	.....	2.1	.....	1.4	1.2	.....

NOTE.—See pages 431, 432 for daily discharge of Monrovia pipe line.

Combined monthly discharge of Sawpit Creek and Monrovia pipe line near Monrovia, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916–17.					1917–18.				
November	3.8	3.0	3.37	154	October	1.7	1.4	1.48	91.0
December	76	3.1	6.97	429	November	1.9	1.5	1.60	95.2
January	7	4.0	4.74	291	December	1.6	1.5	1.57	96.5
February	38	3.5	7.99	444	January	1.6	1.5	1.51	92.8
March	10	4.2	5.57	342	February	10	1.5	2.37	132
April	5	3.1	3.89	231	March	89	2.9	13.1	805
May	3.9	2.6	3.21	197	April	5.5	2.8	3.71	221
June	3.1	2.1	2.54	151	May	2.7	2.1	2.45	151
July	2.0	1.8	1.92	118	June	2.1	1.6	1.85	110
August	1.8	1.7	1.73	106	July	1.7	1.4	1.44	88.5
September	1.7	1.5	1.57	93.4	August	1.4	1.2	1.30	79.9
					September	1.5	1.2	1.28	76.2
The period	.....	.....	.....	2,560	The year	89	1.2	2.81	2,040

MONROVIA PIPE LINE NEAR MONROVIA, CALIF.

LOCATION.—Near southeast corner sec. 14, T. 1 N., R. 11 W., 300 feet above settling reservoir at mouth of Sawpit Canyon, and 1½ miles north of Monrovia, Los Angeles County.

RECORDS AVAILABLE.—May 18, 1916, to September 30, 1918.

GAGE.—Vertical staff in weir box.

DISCHARGE.—Measured by two rectangular weirs with end contractions. Left weir, 2.25 feet long; right weir, 2.26 feet long. Crest of left weir is at zero gage height; crest of right weir is 0.02 foot lower at one end. Weir table has been checked by current-meter measurements made at mouth of intake pipe in weir box.

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Extremes of discharge.—1916–1918: Maximum stage recorded, 0.49 foot May 18–19, 1916 (discharge, 5.0 second-feet); minimum stage, 0.18 foot August 26 to September 13, 1918 (discharge, 1.1 second-feet).

Accuracy.—Stage-discharge relation considered permanent since conditions of backwater for any stage are probably constant. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent.

Cooperation.—Gage-height record furnished by city of Monrovia.

The Monrovia pipe line furnishes part of the water supply of Monrovia. It obtains its water from two branches of Sawpit Creek. Most of this water is collected by tunnels driven into the sides of the canyon.

The following discharge measurement was made by J. C. Dort:

May 19, 1916: Gage height, 0.49 foot; discharge, 5.1 second-feet.

Daily discharge, in second-feet, of Monrovia pipe line near Monrovia, Calif., for 1916–1918.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1916.						1916.					
1	.....	4.4	3.6	2.8	2.5	16	.....	3.9	3.3	2.7	2.4
2	.....	4.4	3.6	2.8	2.5	17	.....	3.9	3.3	2.7	2.4
3	.....	4.4	3.6	2.8	2.5	18	5.0	3.9	3.3	2.7	2.4
4	.....	4.2	3.6	2.8	2.5	19	[a] 5.0	3.9	3.3	2.7	2.4
5	.....	4.2	3.6	2.8	2.5	20	[a] 4.8	3.9	3.3	2.7	2.4
6	.....	4.2	3.4	2.7	2.5	21	4.7	4.0	3.3	2.7	2.4
7	.....	4.2	3.4	2.7	2.5	22	4.7	3.9	3.3	2.7	2.5
8	.....	4.2	3.4	2.7	2.5	23	4.7	3.9	3.0	2.7	2.5
9	.....	4.2	3.3	2.7	2.5	24	4.7	3.9	3.0	2.6	[b] 2.5
10	.....	4.2	3.3	2.7	2.5	25	4.7	3.6	3.0	2.6	[b] 2.5
11	.....	4.2	3.3	2.7	2.5	26	4.7	3.6	3.0	2.6	[b] 2.5
12	.....	4.2	3.3	2.7	2.5	27	4.6	3.6	3.0	2.6	[b] 2.5
13	.....	3.9	3.3	2.7	2.5	28	4.4	3.6	3.0	2.6	[b] 2.5
14	.....	3.9	3.3	2.7	2.4	29	4.4	3.6	3.0	2.6	[b] 2.5
15	.....	3.9	3.3	2.7	2.4	30	4.4	3.6	3.0	2.6	[b] 2.5
						31	4.4	.....	3.0	2.5	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	3.4	1.7	2.2	1.5	1.5	1.7	2.4	3.4	3.1	2.0	1.8	1.7
2	3.4	1.8	2.2	1.5	1.5	1.7	2.6	3.4	3.1	2.0	1.8	1.6
3	2.4	1.9	2.1	1.5	1.5	1.7	3.0	3.4	3.1	2.0	1.8	1.6
4	1.8	1.9	1.7	1.5	1.5	1.7	3.4	3.4	3.1	2.0	1.8	1.6
5	1.8	1.8	1.7	1.5	1.5	1.7	3.7	3.1	3.1	2.0	1.8	1.6
6	1.9	1.7	1.7	1.5	1.5	1.7	3.6	3.1	3.0	2.0	1.8	1.6
7	1.9	1.7	1.7	1.5	1.5	1.7	3.4	3.1	2.8	2.0	1.8	1.6
8	1.9	1.7	1.7	1.5	1.7	2.0	3.6	3.4	2.8	2.0	1.8	1.6
9	1.9	1.7	1.7	1.5	2.1	2.0	3.9	3.6	2.8	2.0	1.7	1.6
10	1.9	1.7	1.7	1.5	2.2	1.7	3.7	3.4	2.8	2.0	1.7	1.6
11	1.9	1.7	1.7	1.5	2.2	1.7	3.4	3.1	2.8	2.0	1.7	1.6
12	1.9	1.7	1.7	1.5	2.2	1.7	3.4	3.1	2.7	1.9	1.7	1.6
13	1.9	1.7	1.7	1.5	2.2	1.7	3.4	3.1	2.6	1.9	1.7	1.6
14	1.9	1.7	1.7	1.5	2.2	1.7	3.4	3.1	2.5	1.9	1.7	1.6
15	1.9	1.9	1.7	1.5	2.1	1.7.	3.4	3.0	2.5	1.9	1.7	1.6
16	1.9	2.2	1.7.	1.5	1.8	1.7	4.0	2.8	2.4	1.9	1.7	1.6
17	1.8	2.2	1.7	1.5	1.5	1.7	2.8	3.1	2.4	1.9	1.7	1.6
18	1.7	2.2	1.7	1.5	1.5	1.7	2.1	3.4	2.4	1.9	1.7	[b] 1.6
19	1.7	2.2	1.7	1.7	1.5	1.7	2.1	3.9	2.2	1.9	1.7	1.6
20	1.7	2.2	1.7	1.7	1.5	1.7	2.6	3.7	2.4	1.9	1.7	1.5
21	1.7	2.2	1.7	1.7	1.9	1.7	3.1	3.4	2.2	1.9	1.7	1.5
22	1.7	2.2	1.7	1.7	1.9	1.7	3.7	3.4	2.2	1.9	1.7	1.5
23	1.7	2.2	1.7	1.6	1.7	1.7	3.9	3.4	2.2	1.9	1.7	1.5
24	1.7	2.2	2.1	1.6	1.7	1.7	3.6	3.4	2.2	1.9	1.7	1.5
25	1.7	2.2	1.5	1.6	1.7	1.7	3.4	3.4	2.2	1.9	1.7	1.5
26	1.7	2.2	1.5	1.6	1.7	1.7	3.7	3.4	2.2	1.9	1.7	1.6
27	1.7	2.2	1.5	1.6	1.7	1.7	4.0	2.7	2.2	1.8	1.7	1.6
28	1.7	2.2	1.5	1.5	1.7	1.7	4.6	2.6	2.1	1.8	1.7	1.5
29	1.7	2.2	1.6	1.5	.....	1.7	4.0	2.7	2.1	1.8	1.7	1.5
30	1.7	2.2	1.5	1.5	.....	2.0	3.7	2.7	2.1	1.8	1.7	1.5
31	1.7	.....	1.5	1.5	.....	2.4	.....	2.8	.....	1.8	1.7	.....

[a] Gage not read; discharge estimated. [b] Gage not read; discharge interpolated.

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Daily discharge, in second-feet, of Monrovia pipe line near Monrovia, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	1.4	1.5	1.6	1.5	1.6	1.6	2.5	2.7	2.1	1.7	1.3	1.2
2	1.4	1.5	1.6	1.5	1.6	1.6	2.1	2.7	2.1	1.6	1.3	1.2
3	1.4	1.5	1.6	1.5	1.6	1.6	2.1	2.7	2.1	1.6	1.3	1.2
4	1.4	1.5	1.6	1.5	1.6	1.5	2.0	2.7	2.1	1.5	1.3	1.2
5	1.4	1.5	1.6	1.5	1.6	1.5	2.0	2.6	2.1	1.5	1.3	1.2
6	1.4	1.9	1.6	1.5	1.6	1.9	2.1	2.6	2.0	1.5	1.3	1.2
7	1.4	1.7	1.6	1.5	1.6	1.7	2.4	2.6	2.0	1.5	1.3	1.2
8	1.4	1.7	1.6	1.5	1.6	1.3	2.4	2.6	1.9	1.5	1.3	1.2
9	1.4	1.6	1.6	1.5	1.6	1.2	2.8	2.6	1.9	1.5	1.3	1.2
10	1.4	1.6	1.6	1.5	1.6	1.3	3.3	2.6	1.9	1.4	1.3	1.2
11	1.4	1.5	1.6	1.5	1.6	1.3	3.3	2.6	2.1	1.4	1.3	1.2
12	1.4	1.6	1.6	1.5	1.6	1.3	3.3	2.4	2.1	1.4	1.3	1.2
13	1.5	1.6	1.6	1.5	1.6	1.2	2.6	2.4	1.9	1.4	1.3	1.2
14	1.6	1.6	1.6	1.5	1.5	1.3	2.1	2.4	1.9	1.4	1.3	1.5
15	1.6	1.6	1.6	1.5	1.5	2.4	2.1	2.4	1.8	1.4	1.4	1.4
16	1.7	1.6	1.6	1.5	1.5	3.3	2.6	2.7	1.8	1.4	1.4	1.4
17	1.7	1.6	1.6	1.5	1.5	3.1	3.0	2.6	1.8	1.4	1.4	1.4
18	1.5	1.6	1.6	1.5	1.9	3.1	3.0	2.5	1.7	1.4	1.4	1.3
19	1.5	1.6	1.6	1.5	1.6	3.0	2.8	2.4	1.7	1.4	1.4	1.3
20	1.5	1.6	1.6	1.5	1.8	1.6	2.8	2.4	1.7	1.4	1.4	1.3
21	1.5	1.6	1.6	1.5	1.9	1.7	2.8	2.4	1.7	1.4	1.4	1.3
22	1.5	1.6	1.6	1.5	2.1	1.7	2.8	2.4	1.7	1.4	1.3	1.3
23	1.5	1.6	1.5	1.5	1.5	2.4	2.8	2.4	1.7	1.4	1.3	1.3
24	1.5	1.6	1.5	1.5	1.3	3.1	3.3	2.4	1.7	1.3	1.3	1.3
25	1.5	1.6	1.5	1.5	2.1	3.1	3.1	2.1	1.7	1.4	1.3	1.3
26	1.5	1.6	1.5	1.5	2.2	2.6	3.1	2.1	1.7	1.4	1.2	1.3
27	1.5	1.6	1.5	1.5	1.6	2.4	3.1	2.1	1.7	1.4	1.2	1.5
28	1.5	1.6	1.5	1.5	1.6	2.6	2.8	2.1	1.6	1.4	1.2	1.4
29	1.5	1.6	1.5	1.5	.....	2.8	2.8	2.4	1.6	1.4	1.2	1.3
30	1.5	1.6	1.5	1.6	.....	2.8	2.8	2.1	1.6	1.4	1.2	1.3
31	1.5	.....	1.5	1.6	.....	2.8	.....	2.1	.....	1.4	1.2	.....

Monthly discharge of Monrovia pipe line near Monrovia, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1916.				
May 18–31	5.0	4.4	4.66	129
June	4.4	3.6	3.98	237
July	3.6	3.0	3.27	201
August	2.8	2.5	2.69	165
September	2.5	2.4	2.47	147
The period	.....	.....	.....	879
1916–17.				
October	3.4	1.7	1.91	117
November	2.2	1.7	1.98	118
December	2.2	1.5	1.72	106
January	1.7	1.5	1.54	94.7
February	2.2	1.5	1.76	97.7
March	2.4	1.7	1.75	108
April	4.6	2.1	3.39	202
May	3.9	2.6	3.21	197
June	3.1	2.1	2.54	151
July	2.0	1.8	1.92	118
1916–17.				
August	1.8	1.7	1.73	106
September	1.7	1.5	1.57	93.4
The year	4.6	1.5	2.08	1,510
1917–18.				
October	1.7	1.4	1.48	91.0
November	1.9	1.5	1.60	95.2
December	1.6	1.5	1.57	96.5
January	1.6	1.5	1.51	92.8
February	2.2	1.3	1.66	92.2
March	3.3	1.2	2.09	129
April	3.3	2.0	2.69	160
May	2.7	2.1	2.45	151
June	2.1	1.6	1.85	110
July	1.7	1.4	1.44	88.5
August	1.4	1.2	1.30	79.9
September	1.5	1.2	1.28	76.2
The year	3.3	1.2	1.74	1,260

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MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the San Gabriel River basin at points other than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous discharge measurements in San Gabriel River drainage basin for 1896–1917.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Nov. —, 1896	San Gabriel River	Pacific Ocean	Above Iron Fork	7.7
Dec. —, 1896	do	do	do	7.4
Jan. —, 1897	do	do	do	28.4
Feb. —, 1897	do	do	do	42
Mar. —, 1897	do	do	do	52.1
Apr. —, 1897	do	do	do	27.9
May —, 1897	do	do	do	24.7
June —, 1897	do	do	do	25.4
July —, 1897	do	do	do	17.8
Aug. —, 1897	do	do	do	16.4
Sept. —, 1897	do	do	do	16.5
Apr. —, 1900	do	do	do	5.76
Aug. 23, 1898	do	do	Above junction with West Fork.	7.11
Aug. 22, 1912	do	do	Just above junction with West Fork of San Gabriel River, in NE.¼ sec. 29, T. 2 N., R. 9 W.	21
Sept. 1, 1913	do	do	Diverting dam of Pacific Light & Power Corporation.	55
June 17, 1896	do	do	Mouth of Vineland tunnel	1.54
Do	do	do	Same; pump running	2.11
Apr. 29, 1897	do	do	Mouth of Vineland tunnel	2.23
Do	do	do	Same; shaft No. 2	2.11
Do	do	do	Mouth of Vineland tunnel, at head of flume, between shafts Nos. 3 and 4.	2.13
Do	do	do	Same; right fork, above shaft No. 4.	1.07
May 24, 1897	do	do	Mouth of Vineland tunnel	1.88
June 17, 1896	do	do	Azusa irrigators' development tunnel.	3.99
Aug. 24, 1898	do	do	Same place; river being diverted through power company's conduit.	.22
Do	do	do	Irrigators' development tunnel, pumped; additional.	.3
Aug. 23, 1898	do	do	Junction of East and West forks.	9.87
Do	do	do	Head works of San Gabriel Power Co.	8.42
July 3, 1898	do	do	Original river channel	6.18
Do	do	do	Channel No. 2; Baldwin ranch house road.	8.79
Do	do	do	Channel No. 3; Campers station.	3.36
Apr. 15, 1903	do	do	El Monte Bridge	50
Apr. 26, 1903	do	do	do	2.29
May 26, 1903	do	do	do	0
Apr. 13, 1905	do	do	do	47
Apr. 15, 1903	do	do	Lexington wash at El Monte	3
May 26, 1903	do	do	Total at head of Lexington wash.	66
Apr. 14, 1903	do	do	Upper road crossing, Duarte to Azusa.	264
Apr. 23, 1903	do	do	Opposite Alamitos	311
Apr. 24, 1903	do	do	Southern California Ry. at Rivera.	365
Do	do	do	Southern California Ry. at Studebaker.	364
Dec. 5, 1897	do	do	Whittier road crossing	106
Apr. 25, 1903	do	do	do	361
Do	do	do	Road crossing east of Durfee's ranch.	264
Nov. —, 1896	Iron Fork of San Gabriel River.	San Gabriel River	Mouth	5.6
Dec. —, 1896	do	do	do	3.0
Jan. —, 1897	do	do	do	10.1
Feb. —, 1897	do	do	do	18.3
Mar. —, 1897	do	do	do	18.9

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Miscellaneous discharge measurements in San Gabriel River drainage basin for 1896–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Apr. —, 1897	Iron Fork of San Gabriel River.	San Gabriel River	Mouth	10.2
May —, 1897	do	do	do	8.9
June —, 1897	do	do	do	7.7
July —, 1897	do	do	do	8.6
Aug. —, 1897	do	do	do	3.9
Sept. —, 1897	do	do	do	4.1
Apr. —, 1900	do	do	do	1.69
Do.	Cattle Canyon Creek	do	Above Coldwater Canyon	.32
Nov. —, 1896	Coldwater Creek	Cattle Canyon		4.1
Dec. —, 1896	do	do		4.2
Jan. —, 1897	do	do		11.3
Feb. —, 1897	do	do		19.1
Mar. —, 1897	do	do		17.8
Apr. —, 1897	do	do		11.3
May —, 1897	do	do		9.8
June —, 1897	do	do		8.3
July —, 1897	do	do		6.5
Aug. —, 1897	do	do		5.1
Sept. —, 1897	do	do		5.0
Apr. —, 1900	do	do		1.46
Apr. —, 1900	West Fork of San Gabriel River.	San Gabriel River	Above Bear Creek	1.8
June 20, 1910	do	do	100 feet above junction with North Fork.	8.5
Aug. 23, 1898	do	do	Near mouth	26.7
Aug. 22, 1912	do	do	Just above mouth in NE. ¼ sec. 29 T. 2 N., R. 9 W.	11
Nov. —, 1896	Bear Creek	West Fork of San Gabriel River.		3.3
Dec. —, 1896	do	do		3.4
Jan. —, 1897	do	do		9.1
Feb. —, 1897	do	do		24.7
Mar. —, 1897	do	do		23.9
Apr. —, 1897	do	do		17.3
May —, 1897	do	do		14.1
June —, 1897	do	do		6.3
July —, 1897	do	do		6.2
Aug. —, 1897	do	do		4.4
Sept. —, 1897	do	do		4.5
Apr. —, 1900	do	do		2.42
Nov. —, 1896	North Fork of West Fork of San Gabriel River.	do		3.7
Dec. —, 1896	do	do		3.6
Jan. —, 1897	do	do		10.8
Feb. —, 1897	do	do		17.0
Mar. —, 1897	do	do		19.4
Apr. —, 1897	do	do		13.8
May —, 1897	do	do		11.2
June —, 1897	do	do		7.1
July —, 1897	do	do		5.9
Aug. —, 1897	do	do		4.1
Sept. —, 1897	do	do		3.9
Apr. —, 1900	do	do		1.43
June 20, 1910	do	do	500 feet above mouth	7.2
Apr. 20, 1903	San Dimas Creek	San Gabriel River	Mouth of canyon	19
May 22, 1903	do	do	do	2.5
Sept. 14, 1903	do	do	do	0
Apr. 20, 1903	do	do	Base Line Avenue	0
Apr. 20, 1903	Dalton Creek	San Dimas Wash	Mouth of canyon	9
May 22, 1903	do	do	do	2.7
Sept. 14, 1903	do	do	do	0
May 22, 1903	do	do	1 mile below mouth of canyon.	0
Apr. 20, 1903	do	do	Southern California Ry	0
May 13, 1916	do	do	Old dam, 1 mile above mouth of canyon, including 1.5 second-feet diverted by pipe line at dam.	1.6
Feb. 20, 1917	do	do	Just below old dam near mouth of canyon.	2.3
Feb. 28, 1917	do	do	100 feet above old dam	8.6
Mar. 17, 1917	do	do	75 feet above old dam	2.9
Apr. 26, 1917	do	do	600 feet below intake of pipe line. Pipe line, below tunnel, diverting 1.3 second-feet.	.01
May 13, 1916	Little Dalton Creek	Dalton Creek	Private bridge at mouth of canyon.	1.2
Feb. 20, 1917	do	do	do	1

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Miscellaneous discharge measurements in San Gabriel River drainage basin for 1896–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Feb. 28, 1917	Little Dalton Creek	Dalton Creek	100 feet above concrete check dam.	4.2
Mar. 17, 1917	do	do	do	1.6
Apr. 26, 1917	do	do	do	.66
Apr. 25, 1903	San Jose Creek	San Gabriel River	Whittier-Puente road	8
May 31, 1916	Thompson Creek	San Jose Wash	One-fourth mile above mouth of canyon.	.6
June 27, 1916	do	do	do	.4
Feb. 20, 1917	do	do	Just above junction with North Fork.	.45
Mar. 17, 1917	do	do	Mouth of canyon below forks	.5
Apr. 26, 1917	do	do	do	0
Apr. 26, 1916	Livecoak Creek	do	Above Morris Camp, 1.1 miles above mouth of canyon (estimated).	.8
May 15, 1916	do	do	do	.7
May 15, 1916	do	do	Mouth of canyon	.4
Feb. 20, 1917	do	do	do	.28
Mar. 17, 1917	do	do	Below Camp Eno	.5
Apr. 26, 1917	do	do	do	.26
July 1, 1898	Sawpit Creek	San Gabriel River	Near mouth of canyon	1.33
Aug. 7, 1900	Sheep Creek	do		2.46
Oct. 3, 1903	do	do	Whittier flume crossing	4.6
Oct. 5, 1904	do	do	do	1.4
Oct. 6, 1905	do	do	do	4.6

Miscellaneous discharge measurements of diversions in San Gabriel River drainage basin for 1898–1918.

Date.	Name.	Locality.	Discharge.
			Sec.-ft.
Aug. 8, 1900	Agricultural ditch		.0
Do	Arroyo ditch		21.1
July 25, 1902	do	Dam	21.7
June 15, 1904	do	do	20.6
July 8, 1904	do	do	19.7
Aug. 31, 1904	do	do	18.6
Sept. 24, 1904	do	do	17.9
Oct. 15, 1904	do	do	20.8
Sept. 27, 1902	do	Intake	24.6
Oct. 11, 1902	do	do	24.2
June 21, 1904	do	do	21.7
Sept. 8, 1902	do	Los Angeles & Salt Lake Ry	19.6
Oct. 11, 1902	do	do	20.5
June 15, 1904	do	do	17.5
July 8, 1904	do	do	17.9
Aug. 18, 1904	do	do	20.6
Aug. 31, 1904	do	do	16.4
Sept. 24, 1904	do	do	17.0
Sept. 27, 1904	do	do	18.8
Oct. 15, 1904	do	do	18.5
June 21, 1904	do	do	19.4
Aug. 18, 1902	do	Point of diversion	23.7
Sept. 8, 1902	do	do	23.2
June 21, 1904	do	Head of flume	16.7
Aug. 31, 1904	do	do	16.2
Sept. 24, 1904	do	do	15.5
Oct. 10, 1904	do	do	18.6
Apr. 25, 1903	do	Southern California Ry	21
Jan. 30, 1912	Azusa canal	1,000 feet below power house near Azusa	32
Jan. 21, 1918	do	300 feet below power house near Azusa	20
Jan. 30, 1918	do	do	22
Jan. 30, 1912	Azusa-Covina canal	300 feet below tailrace of power house near Azusa.	27
July 29, 1902	Baldwin ditch (Rio Hondo)	Point 1	3.2
Aug. 18, 1902	do	do	3.7
Sept. 8, 1902	do	do	.91
Sept. 27, 1902	do	do	2
Oct. 15, 1902	do	do	1.6
June 15, 1904	do	do	3
July 8, 1904	do	do	3.4
Aug. 31, 1904	do	do	3
Sept. 24, 1904	do	do	2.8

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Miscellaneous discharge measurements of diversions in San Gabriel River drainage basin for 1898–1918—Continued.

Date.	Name.	Locality.	Discharge.
Oct. 5, 1904	Baldwin ditch (Rio Hondo)	Point 1	2.9
Oct. 15, 1904	do	do	.2
July 20, 1902	do	Point 3	1.2
Aug. 18, 1902	do	do	.7
Sept. 8, 1902	do	do	.72
Sept. 27, 1902	do	do	.63
Oct. 11, 1902	do	do	.75
Sept. 24, 1903	do	do	.94
Oct. 15, 1903	do	do	.78
June 8, 1904	do	do	.96
June 15, 1904	do	do	1.4
Aug. 31, 1904	do	do	.8
July 29, 1902	do	Point 4	1.9
Aug. 18, 1902	do	do	1.2
Sept. 8, 1902	do	do	.99
Sept. 27, 1902	do	do	.52
Oct. 11, 1902	do	do	.81
June 15, 1904	do	do	.0
July 8, 1904	do	do	.0
Aug. 31, 1904	do	do	.62
Oct. 15, 1904	do	do	.0
Oct. 6, 1905	do	Old Mission Bridge	3
May 23, 1903	Baldwin division (Santa Anita Creek).	Heading	3
Sept. 9, 1903	do	do	1.4
Aug. 7, 1900	Banta ditch		15.4
July 15, 1902	do		16.5
Oct. 2, 1903	do	Heading	28
Oct. 5, 1904	do	100 feet below division box	19.5
Oct. 6, 1905	do	Below headgate of Ranchito ditch	16.8
Aug. 7, 1900	Cate ditch	Near head	8.7
July 15, 1902	do	In flume at road crossing	10.6
Oct. 2, 1903	do	do	5.5
Oct. 11, 1904	do	do	11.1
Oct. 6, 1905	do	do	11.2
Jan. 30, 1912	Duarte canal	About one-fourth mile below tailrace of Pacific Light & Power Corporation's power house at Azusa, Calif.	9.9
Aug. 9, 1912	do	do	7.8
Jan. 30, 1918	do	do	8
Oct. 3, 1903	Durfee ditch	Road crossing above ranch house	1.6
Oct. 5, 1904	do	do	.0
Aug. 7, 1900	Killon's pumping plant	4 wells near El Monte	10.2
Aug. 8, 1900	Little Lake		.22
Oct. 9, 1898	Mayberry Canyon	Alhambra and Mayberry water	1.64
Sept. 23, 1899	do	Alhambra water	1.38
July 3, 1898	Puente ditch	50 per cent of usual head in ditch	1.22
July 7, 1898	Rincon ditch		2.47
Oct. 3, 1903	do	Rincon road crossing	3.4
Oct. 5, 1904	do	do	1.5
Oct. 6, 1905	do	do	3.4
Aug. 8, 1900	Rodriguez ditch	Near Old Mission	2
June 2, 1911	San Gabriel Water Co.'s canal	100 feet above U. S. G. S. gaging station on San Gabriel River near Azusa, Calif.	6.2
June 22, 1911	do	do	15
Sept. 1, 1902	Slauson well		.9
Jan. 21, 1918	Southern California Edison Co.'s canal.	Tunnel 4 A	29
Jan. 30, 1918	do	do	31
July 18, 1918	do	do	47
Aug. 7, 1900	Standiferd ditch		14.6
July 15, 1902	do		19.1
Oct. 2, 1903	do	Heading	14
Oct. 5, 1904	do	do	12.9
Oct. 6, 1905	do	do	15.6
July 3, 1898	Temple ditch	Left of Narrows flume	9.1
Aug. 7, 1900	do		1.2
July 3, 1898	Whittier ditch	El Monte road crossing	2.52
Aug. 7, 1900	do		5.71
Oct. 3, 1903	do	Pumping plant east of El Monte, developed water.	5.1

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Discharge measurements of miscellaneous water supplies at points in San Gabriel Valley, Calif., for 1900.

[Made by W. W. Cockins.]

Date.	Locality.	Discharge.
1900.		*Sec.-feet.*
Sept. 17	Bradbury ranch, Santa Anita and Rose avenues.	1.44
17	San Gabriel Sanitarium tunnel.	.04
18	W. A. Highland Rose avenue, Lamanda Park.	.10
19	Chapman ranch. two wells pumped; 1 artesian well.	1.01
19	Chapman ranch, four wells pumped.	1.90
20	Chapman ranch, natural flow of ciénaga.	.07
20	Chapman ranch dairy	.72
	Chapman ranch, total	3.70
20	Alhambra Water Co., weir No. 1.	2.58
20	Alhambra Water Co., weir No. 2.	.34
	Total	2.92
24	Santa Anita Canyon, natural flow.	.22
24	Sierra Madre Water Co. (weir)	.145
24	Remamettes east of Sierra Madre.	.09
18	Monrovia Water Co., 3 wells pumped.	3.24
24	Monrovia Canyon, to Monrovia Water Co. (weirs).	.428
	To Bradbury	.116
	Total	.544
1900.		*Sec.-feet.*
Sept. 21	Duarte Mutual Improvement & Canal Co.	.78
21	Beardsley Water Co	.44
13	Morengo Water Co., Southern Pacific Co.'s Garfield station (weir).	1.82
13	Morengo Water Co.'s weir in Morengo Canyon (weir).	.46
13	Los Robles Water Co.'s reservoir (weir).	.31
13	Reservoir at junction of Glenarm and Los Robles avenues, Pasadena (weir).	.068
13	Graves & Bean tunnel	1.10
14	Brick kiln between Molino and Hope streets, Padadena.	.02
14	Oak Knoll Park, Pasadena	.34
14	Patton tunnel, near Kewen Lake.	.18
14	Patton's east canyon	1.48
17	Patton's east canyon, natural flow; pump not running.	.37
17	Mission ditch, Patton ranch	.20
14	Winston ranch	.56
14	Shorbes ranch (weir)	.18
15	Yoakham's ranch (weir)	.12
15	Robert Liddel, San Pasqual and Shorb (weir).	.10
15	R. W. Scoville (weir)	.07
15	Mrs. Black, San Pasqual and Craig streets (weir).	.07
15	Morningside ranch (weir)	.04

Discharge measurements of water supplies in San Dimas Wash, Calif., for 1900.

[Made by Irwin F. Daniels.]

Date.	Well.	Discharge.
		Sec.-feet.
Sept. 27	Daty & Sons	1.80
27	San Dimas Irrigation Co., F. D. Smith well.	1.20
27	Thacker well	.80
27	Smith well (private)	.30
27	Chapman well	.70
27	Ruddock well	.50
27	Artesian Belt Co., 2 wells	1.60
Sept. 27	Azusa city well	.20
27	Walker well	.90
27	Citizens' Water Co. (Covina)	.10
27	Covina plant, Deacon well	.44
27	Natural flow, San Dimas Canyon.	.04
27	Spark's well	.40
		11.38

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Discharge measurements in San Gabriel Valley at wells on Lordsburg Mesa, Calif., for 1900.

[Made by Irwin F. Daniels.]

Date.	Well.	Discharge.	Date.	Well.	Discharge.
		Sec.-feet.			*Sec.-feet.*
Sept. 27	Richards, 4 wells	1.52	Sept. 27	Kulp (Intermittent) south of Mesa Avenue.	0.20
27	Sumner	.48	27	D. Fulton	.50
27	Sheldon Bros	.30	27	Steves	.20
27	La Verne Land & Water Co	.70	27	Daniels & Overholtzer	1.34
27	Rodgers	.10	27	Massey, 2 wells	.54
27	True (5 days in 30)	.16	27	Hauser Bros	.76
27	Rodney Soper	.24	27	Moorwaw & Son	.50
27	Hayes & Stratton	.20	27	Sleider	.88
27	Wallace	.16	27	Rutherford & Co	.40
27	Mullard	.30	27	New Deal Water Co	.40
27	Douglas & McQuilly	.76	27	Kiser	.90
27	Norris	.30			
27	Williams Bros	.80			12.64

WATER ABSORBED IN SAND AND GRAVEL.

During the winter of 1902–3 the precipitation in southern California was greater than at any time during the preceding 10 years. This condition led to heavy irrigation during the spring of 1903, many irrigators taking advantage of it to thoroughly saturate the soil at a time when water was plenty and cheap, thereby saving much expense and contention which always accompanies a later irrigation when water is scarce and expensive and the demand is greater than the supply.

Immediately after the rain of April 16, 1903, a series of measurements were made by W. B. Clapp under the direction of the United States Geological Survey to determine the quantity of water being absorbed in the sand and gravel washes of the larger tributary streams of the three principal river basins of southern California—Santa Ana, San Gabriel, and Los Angeles rivers. Measurements were taken at the mouths of the canyons where the streams leave the mountains, at all canal diversions, and at such intervals along the streams as time and the available force detailed for this work would allow, the location of the point where the stream entirely disappeared or left the valley being noted. These measurements show the quantity of water taken up in the sand and gravel wash of this stream on the days given, and the following tables give this quantity in second-feet and acre-feet for a period of 24 hours:

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Water discharged from tributary streams and sinking in the San Gabriel River basin above El Monte, Calif., for 1903.

Stream.	Second-feet.			Acre-feet.			Passing El Monte.	
	Diversion.	Waste.	Total.	Diversion.	Waste.	Total.	Second-feet.	Acre-feet.
APR. 26.								
San Gabriel	40	285	325	79	565	644	229	454
San Dimas	.....	19	19	.....	38	38	.....	.....
Dalton	.....	9	9	.....	18	18	.....	.....
Santa Anita	.....	40	40	.....	79	79	.....	.....
Eaton Canyon	.....	29	29	.....	57	57	.....	.....
	40	382	422	79	757	836	229	454
MAY 23.								
San Gabriel	70	97	167	139	192	331	.....	.....
San Dimas	2	.5	2.5	4	1	5	.....	.....
Dalton	1.3	1.4	2.7	26	2.8	5.4	.....	.....
Santa Anita	3	10	13	6	20	26	.....	.....
Eaton Canyon	3	3	6	6	6	12	.....	.....
	79	112	191	158	222	380	.....	.....

LOS ANGELES RIVER BASIN.

GENERAL FEATURES.

Los Angeles River is formed by Tujunga, Pacoima, and other small creeks, whose sources lie in the Sierra Madre northeast of the city of Los Angeles. These streams leave the mountains at a point about 25 miles above the city and enter the comparatively flat country of the San Fernando Valley, where, execpt at times of excessive flood, the waters disappear in the sand and gravel washes. At the lower end of this valley is a secondary range of hills, extending from east to west, and bedrock obstruction forces the water to the surface to form what is known as Los Angeles River. Below this point the river flows through the flat country of the Los Angeles Valley and enters the Pacific near the town of Long Beach.

During the summer the entire flow of Los Angeles River is diverted at a point about 5 miles above Los Angeles for the supply of the city, only a small amount of water passing this point except during flood periods.

At the city of Los Angeles the river is joined by Arroyo Seco, which drains an area of 21 square miles in the Sierra Madre. This stream issues from the mountains on the west side of Pasadena Mesa and passes through an opening in a granite spur known as Devils Gate. Between the point where it leaves the mountain and Devils Gate lies a broad river bottom 2 miles long, composed of coarse material. In passing over this the water sinks rapidly, diminishing in volume of flood water from the mouth of the canyon to Devils Gate.

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LOS ANGELES RIVER ABOVE LOS ANGELES, CALIF.

Discharge of Los Angeles River at weirs above Los Angeles, Calif., for 1896–1897.

Weir No. 11, 9.88 miles above city limits.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1896.				
August	16	13	14	861
September	16	14	15	898
October	22	14	16	984
November	18	15	16	952
December	19	15	16	984

Weir No. 1, 9.79 miles above city limits.

1896.				
August	21	19	20	1,230
September	21	19	20	1,190
October	26	19	20	1,230
November	24	19	21	1,250
December	23	19	20	1,230

Weir No. 4, 7.27 miles above city limits.

1896.				
August	46	41	44	2,705
September	44	41	43	2,589
October	56	41	44	2,705
November	52	43	46	2,737
December	55	43	47	2,828
1897.				
January	47	44	46	2,828

Weir No. 5, 4.87 miles above city limits.

1896.				
August	77	67	71	4,366
September	76	63	71	4,225
October	82	65	69	4,243
November	76	68	70	4,165
December	96	67	72	4,427
1897.				
January	96	67	73	4,489
February	96	71	77	4,276

Weir No. 8, 3.65 miles above city limits.

1896.				
August	73	67	70	4,304
September	73	65	69	4,106
October	83	65	69	4,243
November	74	67	71	4,225
December	93	68	73	4,489
1897.				
January	79	71	73	4,489

LOS ANGELES RIVER AT THE NARROWS, CALIF.

The streams entering San Fernando Valley have brought down immense quantities of sand and gravel from the mountainous area, and thus have formed the San Fernando Plains. This coarse deposit acts as a natural regulator, absorbing the flood waters, which grad-

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ually appear lower down. The rainfall of southern California was deficient for the few years prior to 1902, but the discharge of Los Angeles River at The Narrows remained exceptionally constant, the decrease in 1900 being not more than 20 per cent of the average. On account of the numerous law suits which have arisen regarding water rights on this river, a thorough study of its discharge was instituted by the city of Los Angeles, the work being under the direction of J. B. Lippincott, as consulting engineer for the city. The majority of the measurements were made by C. A. Miller, although a number of them were made by F. H. Olmsted, city engineer. Several weirs were placed in the river where the measurements are made. The points of measurements are as follows, in order downstream:

Weir A, at the intersection of Pacoima Avenue with Los Angeles River, in the Lankershim Rancho subdivision.

Weir B, at the intersection of Vineland Avenue with Los Angeles River.

Weir C, at the intersection of Fernando Avenue with Los Angeles River.

Weir E, at the southwest corner of block 73, Providencia Rancho.

Weir G, at the intersection of the east line of block 71, Providencia Rancho, with Los Angeles River.

Weir L, 770 feet above weir H.

Weir H, approximately 300 feet east of the intersection of Buena Vista Street with Los Angeles River.

Weir I, 2,543 feet below weir H.

Weir J, 600 feet east of the west line of block 69, Providencia Rancho.

Weir K, in block 79, Providencia Rancho, 300 feet west of center.

Measuring bridge P, near the southwest corner of block 81, Providencia Rancho, in the headworks site of the city of Los Angelos, commonly known as the Pomeroy & Hooker tract, where river turns to the east at angle of 90 degrees.

Measuring bridge Q, about 400 feet above the junction of the Verdugo Wash with Los Angeles River.

Measuring bridge No. 2, about 600 feet above the head of the power ditch of the Los Angeles City Water Co., in the so-called Crystal Springs tract.

Weir No. 7, 1 mile below the head, in the main supply ditch, sometimes called the Woolen Mill ditch, in the headworks site.

Measuring point No. 7B, at a 3-foot cement pipe in the same ditch, west of bridge No. 2 and at the Los Felix ranch house.

Weir No. 17, opposite bridge No. 2, on what is called the Glassell tributary.

(To get the total flow of river at bridge No. 2, there should be combined the flow at bridges No. 2, No. 17, and No. 7B. In case measurements were not taken on the main supply ditch at No. 7B, the measurement observed at weir No. 7, above No. 7B on the main supply ditch, was used, and the loss between No. 7 and No. 7B, 2.49 second-feet, was deducted. This is shown in detail in the table for bridge No. 2. For bridge Q a similar process is followed, omitting No. 17. For bridge P the observed flow at the bridge is combined with either the flow at No. 7 or at No. 7B.)

Weir No. 9, at the mouth of Tujunga Creek, near the western end of the headworks site, and near the intersection of Buena Vista Street with Los Angeles River.

Weir No. 10, approximately 200 feet west of weir No. 9, at the outlet of a small cut which was run into the gravel bed for the development of water.

Weir M, block 67, Providencia Rancho, on a small stream entering the river in the headworks tract.

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Discharge measurements of Los Angeles River, Calif., for 1899–1900.

Weir A.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-ft.*	*Sec.-ft.*	1900.	*Sec.-ft.*	*Sec.-ft.*
Aug. 14	0.565	0.612	May 17	0.461	0.461
19	.660		June 12	.461	.431
Sept. 20	.500	.500	29	.402	
26	.500		Aug. 1	.310	.370
Oct. 24	.687	.687	8	.368	
Nov. 24	.725	.723	15	.372	
28	.721		31	.430	
Dec. 7	.678	.723	Sept. 8	.378	.368
28	.768		11	.400	
			27	.328	
			Nov. 10	.380	.380
Mean		.649	Mean		.402

Weir B.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.			1900.		
Aug. 14	0.500	0.500	May 17	0.482	0.482
Sept. 20	.500	.500	June 12	.430	.355
26	.500		29	.280	
Oct 24	.755	.755	July 27	.160	.160
Nov. 24	.937	.939	Aug. 1	.180	.198
28	.941		15	.197	
Dec. 7	.864	.923	31	.219	
28	.982		Sept. 8	.209	.203
			11	.223	
			27	.176	
			Nov. 10	.260	.260
Mean		.723	Mean		.276

Weir C.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.			1900.		
Aug. 14	2.88	2.88	May 17	2.98	2.98
28	2.88		June 12	2.91	2.91
Sept. 20	2.69	2.48	July 27	2.45	2.45
26	2.26		Aug. 1	2.50	2.50
Oct. 9	2.88	2.93	8	2.48	
24	2.98		15	2.48	
Nov. 24	3.45	3.43	31	2.55	
28	3.42		Sept. 8	1.58	1.86
Dec. 28	3.44	3.44	11	2.38	
			27	1.63	
			Nov. 10	2.42	2.42
Mean		3.03	Mean		2.52

Weir E.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.			1900.		
Aug. 14	5.55	5.55	May 15	5.45	5.45
28	5.55		June 12	5.18	4.99
Sept. 20	5.35	5.30	29	4.81	
26	5.25		July 12	4.80	4.80
Oct. 25	5.99	5.99	27	4.80	
Nov. 17	6.53	6.38	Aug. 1	4.53	4.63
28	6.24		15	4.47	
Dec. 13	6.24	6.26	31	4.88	
21	6.24		Sept. 8	4.49	4.48
26	6.30		11	4.65	
			27	4.30	
			Nov. 10	4.67	4.67
Mean		5.89	Mean		4.84

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Discharge measurements of Los Angeles River, Calif., for 1899–1900—Continued.

Weir G.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-ft.*	*Sec.-ft.*	1900.	*Sec.-ft.*	*Sec.-ft.*
Aug. 14	7.92	7.92	May 15	7.94	7.94
28	7.92		June 12	7.63	7.31
Sept. 20	7.60	7.60	29	7.00	
26	7.60		July 27	6.45	6.45
Oct. 9	7.66	8.13	Aug. 1	6.45	6.70
25	8.60		15	6.80	
Nov. 17	9.17	9.08	31	6.87	
28	8.99		Sept. 8	6.72	6.80
Dec. 13	8.90	8.90	11	7.00	
21	8.90		27	6.68	
26	8.92		Nov. 13	6.99	6.99
Mean		8.33	Mean		7.03

Weir L.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.			1900.		
Aug. 14	9.08	9.00	May 15	8.85	8.79
28	8.03		23	8.73	
Sept. 20	8.59	8.74	June 12	8.62	8.46
26	8.89		29	8.30	
Oct. 9	8.59	9.22	July 27	7.53	7.53
25	9.58		Aug. 1	7.53	7.71
27	9.48		8	7.59	
Nov. 17	10.15	10.04	15	7.69	
28	9.93		31	8.02	
Dec. 13	10.02	10.11	Sept. 8	7.82	7.92
21	10.02		11	8.20	
26	10.30		27	7.76	
			Nov. 10	8.34	8.34
Mean		9.42	Mean		8.12

Weir H.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.			1900.		
Aug. 14	11.88	12.04	May 15	11.42	11.31
28	12.19		23	11.21	
Sept. 20	11.60	11.82	June 12	11.01	10.84
26	12.03		29	10.68	
Oct. 9	11.60	12.31	July 27	9.96	9.96
25	12.66		Aug. 1	9.96	10.20
27	12.66		8	10.16	
Nov. 17	13.73	13.60	15	10.13	
28	13.47		31	10.57	
Dec. 13	13.42	13.62	Sept. 8	10.15	10.19
21	13.64		11	10.39	
26	13.80		27	10.03	
			Nov. 10	10.54	10.54
Mean		12.68	Mean		10.51

Weir I.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.			1900.		
Aug. 14	17.18	17.04	May 15	16.25	16.15
28	16.91		23	16.05	
Sept. 20	17.15	17.23	June 12	15.66	15.57
26	17.32		29	15.49	
Oct. 9	17.19	17.76	July 12	15.56	15.16
25	18.33		27	14.74	
Nov. 17	19.04	18.88	Aug. 1	14.37	14.70
28	18.72		8	14.94	
Dec. 13	18.93	18.96	15	14.69	
26	18.99		31	14.80	
			Sept. 8	14.54	14.53
			11	14.74	
			27	14.31	
			Nov. 10	14.92	14.92
Mean		17.97	Mean		15.17

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Discharge measurements of Los Angeles River, Calif., for 1899–1900—Continued.

Weir J.

[Total discharge of river at weir J equals discharge over weir + discharge at No. 7, or + No. 7B + 2.49.]

Date.	Discharge at No. 7, or No. 7B+2.49	Discharge over weir.	Total discharge for weir.	Average for month.
1899.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Second-feet.*
Aug. 14	18.59	0.55	19.14	18.76
28	17.90	.49	18.39	
Sept. 20	17.90	.49	18.39	18.58
26	18.28	.49	18.77	
Oct. 9	18.08	.44	18.52	18.91
25	17.45	1.85	19.30	
Nov. 17	18.02	2.91	20.93	20.71
28	13.78	6.71	20.49	
Dec. 13	13.90	6.34	20.24	20.31
26	13.66	6.73	20.39	
Mean				19.45
1900.				
May 15	20.00	1.39	21.48	19.76
23	16.37	1.67	18.04	
June 12	19.81	.86	20.67	18.92
29	16.31	.86	17.17	
Aug. 15	18.49	.41	18.90	19.31
31	19.25	.46	19.71	
Sept. 8		.42		
11	19.81	.52	20.33	19.15
27	17.59	.39	17.98	
Nov. 10	14.84	1.49	16.33	16.33
Mean				18.69

Weir K.

[Total discharge of river at weir K equals discharge over weir + discharge at No. 7, or + No. 7B+ 2.49.]

1899.				
Aug. 14	18.59	4.13	22.72	22.27
28	17.90	3.92	21.82	
Sept. 20	17.90	3.91	21.81	22.03
26	18.28	3.98	22.26	
Oct. 9	18.08	4.13	22.21	22.68
25	17.45	5.70	23.15	
Nov. 17	18.02	6.97	24.99	24.73
28	13.78	10.69	24.47	
Dec. 13	13.90	10.69	24.59	24.58
26	13.66	10.92	24.58	
Mean				23.26
1900.				
May 15	20.09	4.94	25.03	23.17
23	16.37	4.94	21.31	
July 2	16.32	2.93	19.25	19.25
Aug. 1		2.55		
15	18.49	2.71	21.20	21.50
31	19.25	2.55	21.80	
Sept. 8		2.81		
11	19.81	2.80	22.61	21.35
27	17.59	2.50	20.09	
Nov. 10	14.84	4.12	18.96	18.96
Mean				20.85

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Discharge measurements of Los Angeles River, Calif., for 1899–1900—Continued.

Bridge P.

[Total discharge of river at bridge P equals discharge at bridge + discharge at No. 7, or + discharge at No. 7B.]

Date.	Discharge at No. 7 or No. 7B.	Discharge at bridge.	Total discharge at bridge.	Average for month.
1899.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Second-feet.*
Aug. 25	18.66	20.22	38.88	38.88
Sept. 20	17.90	19.36	37.26	38.50
27	18.66	21.08	39.74	
Oct. 10	18.08	19.81	37.89	37.16
25	17.45	17.62	35.07	
28	17.45	21.06	38.51	
Nov. 17	18.02	25.73	43.75	42.34
28	13.18	27.75	40.93	
Dec. 13	13.90	31.94	45.84	43.58
26	13.66	27.67	41.33	
Mean				40.09
1900.				
May 15	17.60	21.22	38.82	36.49
23	13.88	20.28	34.16	
June 12	17.32	18.59	35.91	35.91
July 2	13.83	19.51	33.34	32.16
12	14.00	16.99	30.99	
Aug. 1	14.00	17.04	31.04	
8	14.00	18.71	32.71	33.23
15	16.00	19.94	35.94	
Sept. 8		19.26		
11	17.32	19.67	36.99	35.23
28	15.10	18.38	33.48	
Mean				34.60

Bridge Q.

[Total discharge of river at bridge Q equals discharge at Q + discharge at No. 7-2.49, or + No. 7B.]

Date.	Discharge at 7-2.49, or 7B.	Discharge at bridge.	Total discharge at bridge.	Average for month.
1899.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Second-feet.*
Sept. 20	15.41	28.12	43.53	43.84
27	16.17	27.99	44.16	
Oct. 10	15.59	27.77	43.36	
25	8.21	27.66	35.87	41.31
28	8.23	36.48	44.71	
Nov. 17	9.36	39.71	49.07	
29	12.20	33.89	46.09	47.58
Dec. 13	11.41	35.99	47.40	45.21
26	11.17	31.86	43.03	
Mean				44.49
1900.				
May 15	17.60	28.42	46.02	43.93
23	13.88	27.97	41.85	
June 12	17.32	27.64	44.96	44.96
July 2	13.83	26.20	40.03	39.41
12	14.00	24.79	38.79	
Aug. 1	14.00	24.48	38.48	38.48
Sept. 8		27.09		
11	17.32	26.22	43.54	43.98
28	15.10	29.33	44.43	
Mean				42.15

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Discharge measurements of Los Angeles River near bridge No. 2, Calif., for 1889–1898.

Date.	Hydrographer.	Locality.	Discharge.
1889.			*Sec.-feet.*
June 15	Wm. Mulholland	River	36.7
15	do	Power ditch	11.1
15	do	Main supply ditch	11.2
	Total at bridge No. 2		59.0
July 15	Wm. Mulholland	River	33.3
15	do	Power ditch	11.0
15	do	Main supply ditch	14.1
	Total at bridge No. 2		58.4
1891.			
Nov. 18	Wm. Mulholland	River	68.0
18	do	Power ditch	10.0
18	do	Main supply ditch	3.0
	Total at bridge No. 2		81.0
1893.			
Nov. —	Wm. Mulholland	River	58.8
—	do	Power ditch	15.0
—	do	Main supply ditch	(?)
1898.			
Feb. 28	do	River	51.8
28	do	Glassell tributary	.7
28	do	Main supply ditch	15.0
28	do	Power ditch, measurement above	.....
	Total at bridge No. 2		67.5

Discharge measurements of Los Angeles River at bridge No. 2, Calif., for 1899–1900.

[Total discharge of river at bridge No. 2 equals discharge at No. 2+discharge at No. 7B, or No. 2+No. 7—2.49.]

Date.	Discharge at No. 7—2.49, or No. 7B.	Discharge at No. 17.	Discharge at bridge.	Total discharge at bridge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*
Aug. 19	15.59	0.06	41.29	56.94	57.79
25	16.17	.06	42.41	58.64	
Sept. 20	15.41	.06	40.23	55.70	56.00
27	16.17	.06	40.07	56.30	
Oct. 10	15.59	.05	39.35	54.99	55.61
25	8.21	.05	48.88	57.14	
28	8.23	.05	44.45	52.73	
31	8.78	.05	48.73	57.56	
Nov. 17	9.36	.06	49.71	59.13	57.39
29	12.20	.06	43.40	55.66	
Dec. 13	11.41	.07	46.69	58.17	58.15
26	11.17	.07	46.89	58.13	
Mean	.....	.....	.....	.....	56.99
1900.					
May 16	17.60	.14	39.61	57.35	54.91
23	13.88	.14	38.46	52.48	
June 12	17.32	.14	39.23	56.69	56.69
July 2	13.83	.10	35.38	49.31	52.43
13	15.32	.14	40.10	55.56	
Aug. 1	14.00	.10	34.62	48.72	51.12
8	14.00	.10	34.77	48.87	
15	16.00	.10	38.58	54.68	
31	16.76	.10	35.36	52.22	
Sept. 8	.....	.....	34.27	.....	.....
11	17.32	.20	35.56	53.08	51.27
28	15.10	.08	34.28	49.46	
Nov. 10	14.84	.10	39.45	54.39	54.39
Mean	.....	.....	.....	.....	53.46

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Average discharge of Los Angeles River at weir 9, Calif., for 1899–1900.

Month.	1899	1900	Month.	1899	1900
	Sec.-feet.	*Sec.-feet.*		*Sec.-feet.*	*Sec.-feet.*
January	1.17	0.52	July	0.55	0.15
February	1.00	.49	August	.48	.18
March	1.16	.39	September	.44	.20
April	1.10	.38	October	.64	.....
May	.71	.30	November	.56	.....
June	.69	.24	December	.52	.....

Average discharge of developed water at weir 10.

Month.	1899	1900	Month.	1899	1900
	Sec.-feet.	*Sec.-feet.*		*Sec.-feet.*	*Sec.-feet.*
January	.....	0.89	July	0.79	0.74
February	.....	.81	August	.79	.73
March	0.96	.86	September	.83	.70
April	.93	.79	October	.86	.....
May	.90	.82	November	.94	.....
June	.86	.79	December	.91	.....

Average discharge of small tributary of Los Angeles River at weir M, Calif., for 1899.

Month.	Discharge.	Month.	Discharge.
1899.	*Sec.-feet.*	1899.	*Sec.-feet.*
January	0.29	July	Dry.
February	.20	August	Do.
March	.20	September	Do.
April	.14	October	Do.
May	.07	November	Do.
June	.06	December	Do.

Average discharge of cut of West Los Angeles Water Co., from gravel beds of Los Angeles River, in San Fernando Valley, Calif., for 1899–1900.

Month.	1899	1900	Month.	1899	1900
	Sec.-feet.	*Sec.-feet.*		*Sec.-feet.*	*Sec.-feet.*
May	.....	5.79	September	6.02	.....
June	.....	5.85	October	5.94	.....
July	.....	5.75	November	6.07	.....
August	6.01	5.87	December	6.08	.....

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Average discharge of Los Angeles River, Calif., for 1899–1900.

Measuring point.	Intervening distance along river.	Average discharge, August to December, inclusive, 1899.	Rate of growth per 100 feet, 1899.	Average discharge, May to November, inclusive, 1900.	Rate of growth per 100 feet, 1900.
	Feet.	*Sec.-feet.*		*Sec.-feet.*	
Weir A		0.649		0.402	
	10,280		0.001		0.001
Weir B		.723		.276	
	3,486		.066		.064
Weir C		3.03		2.52	
	7,069		.039		.033
Weir E		5.89		4.84	
	4,585		.053		.048
Weir G		8.33		7.03	
	1,041		.105		.105
Weir L		9.42		8.12	
	770		.424		.310
Weir H		12.68		10.51	
	2,543		.210		.183
Weir I		17.97		15.17	
	3,926		.038		.089
Weir J		19.45		18.69	
	3,600		.100		.060
Weir K		23.06		20.85	
	6,345		.268		.217
Bridge P		40.09		34.60	
	4,629		.095		.163
Bridge Q		44.49		42.15	
	6,756		.185		.167
Bridge No. 2		56.99		53.46	

DIVERSIONS FROM LOS ANGELES RIVER.

During the summer the amount of water in the 44-inch conduit and in the main-supply conduit of the city of Los Angeles has been measured to determine the amount of water diverted from Los Angeles River for domestic supply. The water is taken from the river near Burbank and the measurements show the entire surface flow and underground development of the river at this point during the summer. Some return seepage water appears again in the river channel near Huron Street, Los Angeles, near which point the city has an underground gallery or tunnel for collecting an auxiliary supply which is pumped into the reservoir and used in the general distributing system.

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Discharge measurements of Los Angeles River and diversions at Los Angeles, Calif., for 1904–5.

Date.	Made by—	Discharge.			
		44-inch conduit.	Main supply ditch.	River at Huron Street.	Total.
		Sec.-ft.	*Sec.-ft.*	*Sec.-ft.*	*Sec.-ft.*
1904.					
Apr. 15	F. B. Cook	42.3	4.5	.....	46.8
May 25	Clapp and Cook	40.0	8.0	.....	48.0
June 18	F. B. Cook	29.2	10.8	.....	40.0
24	do	31.7	8.6	.....	40.3
27	Clapp and La Rue	34.2	8.6	3.7	46.5
July 19	La Rue and Cook	33.1	10.2	5.3	48.6
Aug. 9	F. B. Cook	29.9	10.4	.....	40.3
18	La Rue and Cook	30.5	10.8	3.6	44.9
Sept. 7	F. B. Cook	29.7	10.4	.....	40.1
20	E. C. La Rue	31.1	11.0	3.4	45.5
Oct. 20	do	31.9	11.6	8.2	51.7
25	F. B. Cook	31.4	11.6	.....	43.0
Nov. 18	La Rue and Cook	33.3	11.8	8.4	53.5
Dec. 28	E. C. La Rue	27.7	10.0	22.2	59.9
1905.					
May 15		42.0	11.0	10.6	63.6
June 22		38.0	9.9	3.3	51.2
July 28		37.0	8.4	4.6	50.0
Sept. 19		35.3	8.7	3.4	47.4

Measurements of flow, in second-feet, of diversions from Los Angeles River by the city of Los Angeles for 1906–1909.

Date.	44-inch conduit discharge.	Main-supply conduit discharge.	Total.	Date.	44-inch conduit discharge.	Main-supply conduit discharge.	Total.
1906.				1908.			
Feb. 24 [a]	26.59	6.58	33.17	Apr. 29	44.44	12.30	56.74
Apr. 20	36.23	7.67	43.90	May 21	43.31	13.81	57.12
June 23	31.76	15.86	47.62	June 25	42.72	12.67	55.39
July 17	34.73	9.43	44.16	July 31	37.73	12.96	50.69
20	33.95	10.23	44.18	Aug. 3	33.34	17.16	50.60
Aug. 22	30.49	13.67	44.16	5	38.12	13.00	51.12
31	32.86	11.30	44.16	7	35.73	15.16	50.89
Sept. 21	38.11	4.43	42.54	26	34.73	16.43	51.16
23	29.48	13.20	42.68	Sept. 22	38.73	16.30	55.03
Nov. 22	32.73	13.50	46.23	Oct. 23	40.24	14.65	54.89
Dec. 18	33.61	15.66	49.27	Nov. 20	35.54	21.78	57.32
1907.				Dec. 30	36.91	22.98	59.89
Apr. 8	42.50	22.61	65.11	1909.			
May 9	44.96	19.50	64.46	Mar. 16	40.19	25.47	65.66
June 5	50.46	8.55	59.01	Apr. 9	37.99	24.65	62.64
July 12	35.13	18.03	53.16	May 13	37.84	23.41	61.25
Aug. 8	32.24	17.38	49.62	June 9	37.93	23.25	61.18
29	36.45	14.69	51.14	July 20	37.28	21.90	59.18
Oct. 8	38.51	16.26	54.77	Aug. 12	35.28	22.22	57.50
Nov. 9	35.52	19.63	55.15	Sept. 8	36.04	21.06	57.10
				Oct. 23	37.02	22.03	59.05

[a] On Feb. 24, 1906, 23.9 second-feet was passing intake and is not included in above total. On Apr. 20, 7.4 second-feet was passing intake and is not included in above total.

PACOIMA CREEK NEAR SAN FERNANDO, CALIF.

LOCATION.—In SE. ¼ NE. ¼ sec. 24, T. 3 N., R. 15 W., about 600 feet above mouth of canyon, and about 4 miles northeast of San Fernando, Los Angeles County.

DRAINAGE AREA.—27.9 square miles (measured on topographic map).

ELEVATION.—About 1,500 feet above sea level.

RECORDS AVAILABLE.—March 31, 1916, to September 30, 1918. (Not complete.)

GAGE.—Gurley graph water-stage recorder, with concrete well and house, on left bank, about 600 feet above mouth of canyon, installed December 2, 1916. (See Pl. XV, *A*.) Previous gage was a staff fastened to a boulder on left bank, 216 feet above water-stage recorder. It was at independent datum and had a different control.

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DISCHARGE MEASUREMENTS.—Made from cable 20 feet above gage well or by wading at gage.

CHANNEL AND CONTROL.—Sand, gravel, and boulders; not permanent. Left bank is steep rock cliff; right bank sloping and covered with brush and trees. Control is a low boulder-and-concrete dam built across channel about 7 feet below gage well. Lowest point in control is at elevation of 1.1 feet on gage.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage from water-stage recorder, 4.68 feet at 4 p. m. December 24 (discharge 1,440 second-feet); stream dry July 11, 1917, to January 11, 1918, and June 26 to September 30, 1918.

DIVERSIONS.—None above station. There is a diversion just below control.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent on account of shifting of gravel above control. Rating curves fairly well defined. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph. Records fair.

Discharge measurements of Pacoima Creek near San Fernando, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec-ft.*	1917.		*Feet.*	*Sec.-ft.*
Mar. 31	F. C. Ebert	1.26	21	May 3	H. J. Tompkins	1.74	7.3
Apr. 6	H. J. Tompkins	1.26	21	12	do	1.72	5.8
17	do	1.14	17	June 8	do	1.67	2.5
27	do	1.04	12	July 1	do	1.50	.1
May 12	J. C. Dort	.85	7.1	Sept. 12	do		*0
22	do	.82	6.5	14	do		*0
June 7	do	.60	3.4	15	do		*0
23	do	.48	1.7	Oct. 28	do		*0
July 2	H. J. Tompkins	.32	.7	Nov. 17	do		*0
13	do	.24	.4	Dec. 30	do	1.23	.03
Dec. 29	J. C. Dort	2.05	23	1918.			
1917.				Feb. 21	E. Tompkins	1.70	6.3
Jan. 10	H. J. Tompkins	1.98	11	27	H. J. Tompkins	1.86	13
19	J. C. Dort	2.04	20	Mar. 7	do	3.10	506
Feb. 2	H. J. Tompkins	1.98	10	8	do	2.31	90
13	do	1.95	8.1	13	do	2.64	183
16	do	2.13	6.1	20	C. W. Sopp	2.22	52
19	Ernest Tompkins	2.18	13	26	H. J. Tompkins	1.84	28
21	J. C. Dort	2.49	136	Apr. 3	do	1.80	15
23	do	2.60	161	17	do	1.72	8.6
26	H. J. Tompkins	2.37	98	24	do	1.72	7.2
Mar. 5	do	2.16	48	May 2	C. W. Sopp	1.70	4.3
14	J. C. Dort	2.03	26	6	do	1.66	4.4
23	H. J. Tompkins	1.96	18	20	do	1.65	3.2
31	do	1.92	14	June 5	H. J. Tompkins	1.60	1.7
Apr. 11	do	1.90	12	22	C. W. Sopp	1.48	.12
12	J. C. Dort	1.76	9.9	July 14	H. J. Tompkins		*0
23	H. J. Tompkins	1.75	9.0				

* Stream dry.

Daily discharge, in second-feet, of Pacoima Creek near San Fernando, Calif., for 1916–1918.

Day.	Mar.	Apr.	May.	June.	July.	Day.	Mar.	Apr.	May.	June.	July.
1916.						1916.					
1						16					
2					0.8	17		16			
3						18		16			0.1
4						19		15		1.2	.1
5						20		15			
6		21				21		15			
7				3.2		22		13	6.6		.1
8						23				1.9	
9						24		14			
10		18				25		13			
11		18				26					
12			7.3			27		13			
13					.4	28					
14		19				29					
15						30					
						31	21				

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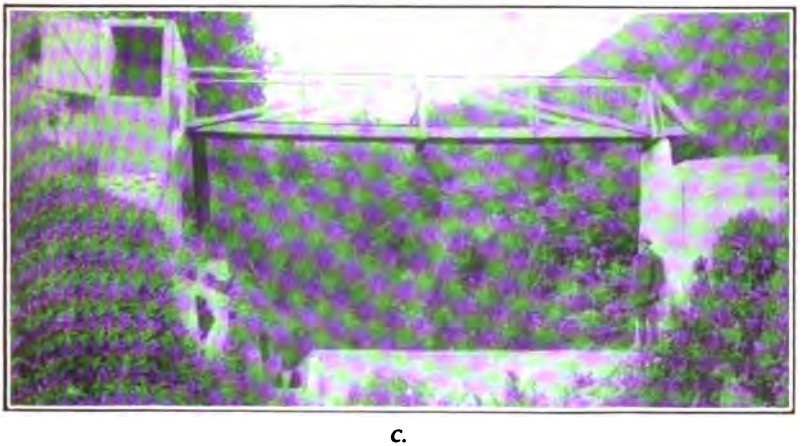
A.

B.



C.

CONCRETE WELL, HOUSE, AND CONTROL.

A, Pacoima Creek near San Fernando, Calif.; *B*, Tujunga Creek near Sunland, Calif.; *C*, Haines Creek near Tujunga, Calif.

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A. WATERMAN CANYON CREEK NEAR SAN BERNARDINO, CALIF.
Showing gravel and sand deposited by first high water after forest fire.

B. FOUNDATION FOR GIBRALTAR DAM, ON SANTA YNEZ RIVER NEAR SANTA BARBARA, CALIF.

C. CABLE SECTION ON SANTA YNEZ RIVER NEAR SANTA BARBARA, CALIF.

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Daily discharge, in second-feet, of Pacoima Creek near San Fernando, Calif., for 1916–1918—Continued.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1916–17.								
1	.....	23	12	68	13	8.5	4.5	0.1
2	2.5	21	12	64	12	7.5	4.5	.1
3	4.5	19	12	57	11	7.5	4.1	.1
4	5	17	12	55	11	6.5	3.7	.1
5	4.0	15	12	53	10	6.5	3.7	.1
6	4.0	14	11	50	9.5	6.5	3.7	.05
7	4.0	14	11	46	9.5	6.5	3.3	.05
8	4.0	13	11	43	10	6.5	3.3	.05
9	3.0	12	10	39	11	6.5	3.3	.05
10	3.0	12	10	36	11	6.5	2.9	.05
11	3.0	11	10	32	12	6.5	2.9	.....
12	3.0	12	10	29	10	6.5	3.3	.....
13	2.5	14	9.5	26	10	5.5	2.5	.....
14	2.5	14	8.5	26	10	5.5	2.1	.....
15	2.5	14	7.5	25	11	6.5	1.3	.....
16	2.5	14	7	24	12	6.5	.9	.....
17	2.5	13	11	22	13	6.5	.5	.....
18	2.5	13	11	22	11	8.5	.4	.....
19	2.5	19	11	21	10	12	.4	.....
20	2.5	17	37	20	9	10	.4	.....
21	2.5	16	141	19	8.5	8.5	.4	.....
22	2.5	14	232	18	8.5	6.5	.4	.....
23	2.5	14	165	17	8.5	5.5	.4	.....
24	425	14	120	16	9	5.5	.3	.....
25	114	14	123	16	9	6.5	.3	.....
26	64	14	95	16	9	6.5	.3	.....
27	37	14	88	15	10	5.5	.3	.....
28	28	14	78	15	10	5.5	.3	.....
29	27	14	.....	15	9	5.5	.2	.....
30	27	14	.....	14	8.5	4.5	.1	.....
31	25	13	.....	14	.....	4.5	.....	.....

NOTE.—No gage-height record Dec. 31 to Jan. 5 and Jan. 28 to Feb. 1; discharge estimated from record of flow on Arroyo Seco. Discharge interpolated Mar. 6–12 as gage-height record was not reliable. No flow July 11 to Sept. 30.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1917–18.							
1	.....	0.1	7.5	18	4.5	3.0	1.1
2	.....	.1	6.5	17	4.3	2.7	.7
3	.....	.1	6	15	4.3	2.4	.....
4	.....	.1	6	14	4.4	1.7	.....
5	.....	.1	6.5	14	4.4	1.5	.....
6	.....	.1	11	13	4.4	1.4	.....
7	.....	.4	191	13	4.2	1.2	.....
8	.....	.1	88	12	4.1	1.1	.....
9	.....	.1	44	12	4.0	.9	.....
10	.....	.0	54	11	3.9	.7	.....
11	.....	.0	230	11	3.8	.7	.....
12	0.1	.0	277	10	3.7	.6	.....
13	.1	.0	165	10	3.6	.4	.....
14	.1	.0	111	9.5	3.5	.3	.....
15	.1	.0	85	9	3.4	.1	.....
16	.1	.0	67	8.5	3.3	.1	.....
17	.1	.2	61	8.5	3.2	.1	.....
18	.1	1.5	54	8.5	3.1	.1	.....
19	.0	.6	56	8	3.0	.1	.....
20	.0	1.5	52	8	3.0	.1	.....
21	.0	5.0	46	7.5	3.0	.1	.....
22	.0	9.5	44	7.5	3.0	.1	.....
23	.0	5.5	42	7	3.0	.1	.....
24	.1	4.4	36	7	3.0	.3	.....
25	.1	10	32	6.5	3.0	.1	.....
26	.1	15	28	6.5	3.0	.0	.....
27	.1	13	25	6	3.0	.0	.....
28	.1	9.5	24	5.5	3.0	.0	.....
29	.1	.....	22	5.5	3.0	.0	.....
30	.1	.....	21	5	3.0	.0	.....
31	.1	.....	19	.....	3.0	.....	.....

NOTE.—No flow Oct. 1 to Jan. 11 and July 3 to Sept. 30.
Discharge, Mar. 20 to May 19, interpolated between measurements on account of shifting control.

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Monthly discharge of Pacoima Creek, near San Fernando, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916–17.					1917–18.				
December 2–31	425	2.5	27.2	1,620	January	0.1	0.0	0.05	3.1
January	23	11	14.7	904	February	15	.0	2.75	153
February	232	7	45.6	2,530	March	277	6	61.9	3,810
March	68	14	30.1	1,850	April	18	5	9.80	583
April	13	8.5	10.2	607	May	4.5	3.0	3.52	216
May	12	4.5	6.70	412	June	3.0	.0	.66	29.4
June	4.5	.1	1.82	108	July	1.1	.0	.06	3.7
July	.1	.00	.024	1.5	The year	277	.0	6.63	4,800
The period				8,030					

NOTE.—No flow August to December, 1917, and August and September, 1918. Record for 1917–18 represents full year.

TUJUNGA CREEK NEAR SUNLAND, CALIF.

LOCATION.—Near center of sec. 32, T. 3 N., R. 13 W. (unsurveyed), at a partly constructed and abandoned dam, about 2 miles above mouth of canyon, and about 4 miles northeast of Sunland, Los Angeles County.

DRAINAGE AREA.—106 square miles (measured on topographic maps).

ELEVATION.—About 1,600 feet above sea level.

RECORDS AVAILABLE.—October 28, 1916, to September 30, 1918. (Discharge measurements only, April 1 to August 27, 1916.)

GAGE.—Stevens continuous water-stage recorder on right bank just above dam. (See Pl. XV, *B*.)

DISCHARGE MEASUREMENTS.—Made from cable about 1,000 feet below gage or by wading at various sections near dam.

CHANNEL AND CONTROL.—Gravel and boulders; apparently permanent. Control is concrete dam, which has a notch in center about 20 feet long and 1 foot deep, with steel angle set in the notch near downstream face. (See Pl. XV, *B*.) Zero flow occurs at a gage height of about 0.45 foot.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage recorded, 3.35 feet at 4:30 p. m. December 24, 1916 (discharge from revised rating curve defined by 1918 measurements, 1,960 second-feet); minimum stage recorded, 0.47 foot at 5 p. m. August 29, 1917 (discharge, 0.2 second-foot).

DIVERSIONS.—Two or three ranches divert a part of the low-water flow for irrigation above the station. There are two small diversions between gage and mouth of canyon.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Frequent discharge measurements have been obtained and rating curve is well defined below 1,000 second-feet. Operation of the water-stage recorder generally satisfactory. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph. Records for high water fair; those for other stages good.

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Discharge measurements of Tujunga Creek near Sunland, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1916.				1917.			
Apr. 1	F. C. Ebert		66	June 10	H. J. Tompkins	0.74	11
10	H. J. Tompkins		53	Aug. 2	do	.52	1.7
19	do		50	Sept. 1	do	.50	.4
28	do		41	12	do	.49	.4
May 12	J. C. Dort		31	27	do	.49	.4
22	do		29	Dec. 20	E. Tompkins	.59	3.3
June 7	do		21				
23	do		14	1918.			
July 2	H. J. Tompkins		11	Jan. 22	C. W. Sopp	.60	4.2
13	do		8.3	Feb. 16	H. J. Tompkins	.62	4.4
Aug. 11	do		3.4	22	do	2.57	576
27	J. C. Dort		2.6	Mar. 3	C. W. Sopp	1.12	38
Nov. 6	do	0.77	12	8	H. J. Tompkins	2.35	302
				26	C. W. Sopp	1.55	82
1917.				Apr. 6	H. J. Tompkins	1.23	50
Jan. 16	H. J. Tompkins	(a)	33	17	do	1.07	33
Feb. 6	do	1.07	33	May 2	do	.90	21
21	J. C. Dort	1.86	124	15	do	.87	17
23	do	2.09	170	27	C. W. Sopp	.82	16
27	do	1.84	123	June 7	do	.72	9.6
Mar. 6	H. J. Tompkins	1.38	61	22	do	.64	5.8
19	J. C. Dort	1.16	41	July 3	H. J. Tompkins	.60	3.3
31	do	1.06	32	21	C. W. Sopp	.52	1.3
Apr. 24	H. J. Tompkins	.94	22	Sept. 2	H. J. Tompkins	.49	.9
May 5	do	.86	18				

[a] Correct gage height not known, as intake pipe was covered with gravel.

Daily discharge, in second-feet, of Tujunga Creek near Sunland, Calif., for 1916–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1		10	14	32	33	87	30	20	15	3.3	1.9	0.5
2		11	15	32	33	81	29	20	14	3.0	1.6	.5
3		12	20	33	33	75	28	19	13	3.0	1.2	.5
4		12	17	32	33	70	26	17	13	3.0	1.2	.8
5		13	15	32	33	64	25	17	14	3.0	.8	.5
6		13	15	32	33	62	24	15	14	3.0	.8	.5
7		13	14	31	32	59	24	16	12	3.0	.8	.5
8		12	15	31	32	57	25	18	12	2.6	.5	.8
9		12	15	31	31	58	29	20	11	2.6	.5	.5
10		12	14	31	30	61	28	21	10	2.6	.4	.5
11		13	14	31	29	58	26	20	10	2.2	.5	.5
12		14	14	32	29	54	25	18	10	2.2	.5	.5
13		13	14	32	29	51	24	17	9.5	2.2	.5	.5
14		12	14	31	28	52	23	16	8	1.9	.5	.5
15		12	14	31	26	50	23	16	7	1.9	.5	.4
16		12	14	33	25	46	30	16	6	1.6	.4	.4
17		13	14	35	39	44	37	16	5.5	1.6	.4	.4
18		13	14	40	33	42	30	21	5.5	1.6	.4	.4
19		14	14	59	34	40	28	23	5.5	1.2	.4	.4
20		14	15	49	64	40	26	20	5.5	1.2	.4	.5
21		13	15	43	120	40	24	18	4.9	1.2	.4	.5
22		14	15	41	182	38	24	17	4.9	1.2	.4	.5
23		14	15	39	166	36	24	19	4.4	1.2	.4	.5
24		14	288	37	130	35	23	19	4.4	1.2	.4	.5
25		14	161	36	182	34	21	19	4.0	1.2	.4	.4
26		14	66	35	160	33	21	19	4.0	1.2	.4	.4
27		14	34	35	125	32	21	17	4.4	1.2	.4	.4
28	8.5	14	33	35	101	32	24	15	4.0	1.2	.4	.4
29	10	14	32	35		32	24	15	3.3	1.9	.3	.4
30	10	14	32	34		32	21	17	3.3	1.9	.4	.5
31	10		32	33		32		17		1.6	.4	

NOTE.—Water-stage recorder not operating satisfactorily Dec. 1-6; Dec. 28 to Feb. 5; and Sept. 24–26. Discharge of these periods interpolated, except Dec. 28 to Feb. 5, estimated from hydrograph of Pacoima Creek and Arroyo Seco.

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Daily discharge, in second-feet, of Tujunga Creek near Sunland, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	0.5	1.9	4.4	3.6	4.9	47	56	24	12	6	0.5	0.4
2	.4	1.9	5.5	3.6	4.9	41	57	21	10	5.5	.5	.4
3	.4	2.2	6	4.0	4.9	37	55	20	12	4.9	.4	.4
4	.4	2.6	6	4.0	4.9	33	52	20	11	3.3	.4	.4
5	.3	3.0	5.5	4.4	4.4	34	32	20	10	3.0	.5	.4
6	.3	6.0	4.9	4.4	4.4	59	48	22	10	2.2	.5	.4
7	.3	6.5	3.6	4.4	6	550	47	23	9.5	1.9	.4	.4
8	.3	6.0	3.6	4.9	5.5	420	44	24	8.5	1.6	.5	.4
9	.3	5.5	4.0	5.5	4.9	148	42	24	8	1.6	.4	.4
10	.3	4.9	4.0	4.0	4.4	199	40	24	7.5	1.6	.4	.4
11	.3	4.9	4.0	4.4	4.4	1,650	38	19	8.5	1.6	.4	.4
12	.4	4.9	4.0	4.4	4.9	1,150	37	17	8	1.2	.4	.4
13	.5	4.4	4.0	5.5	4.9	1,100	38	18	7.5	1.6	.4	.4
14	.8	4.4	4.0	5.5	4.9	764	36	17	7	1.9	.4	.5
15	.8	4.0	4.4	5.5	4.9	340	34	17	7	1.9	.5	.5
16	.5	4.0	4.4	4.9	4.9	183	33	15	6.5	1.6	.4	.5
17	.5	3.6	4.4	5.5	7	147	32	19	6.5	.8	.4	.5
18	.4	3.3	4.4	4.9	16	131	30	19	6	.8	.4	.5
19	.3	2.6	4.4	4.0	12	139	27	19	7.5	.5	.4	.5
20	.4	2.2	4.4	4.0	20	140	27	19	8	.5	.5	.5
21	.4	2.6	3.6	4.0	104	128	26	19	6	1.2	.5	.5
22	.5	2.6	3.6	4.0	340	120	27	19	6	1.2	.5	.8
23	.5	2.6	3.6	4.4	123	107	27	19	6	1.2	.5	.8
24	.5	2.6	3.6	4.4	74	100	28	18	6	1.2	.5	.8
25	1.2	3.3	3.6	4.9	106	87	28	19	6	1.2	.5	1.2
26	1.2	3.6	3.6	5.5	133	80	29	21	5.5	.8	.5	1.2
27	1.6	3.6	3.6	4.9	85	74	29	17	4.4	.8	.5	2.2
28	2.2	3.6	3.3	4.4	62	70	27	19	4.0	.5	.5	3.6
29	1.9	3.3	3.0	4.9	.....	63	26	19	4.0	.5	.4	2.6
30	2.2	3.6	3.3	5.5	.....	59	24	16	4.0	.5	.4	2.2
31	2.2	.....	3.6	5.5	.....	58	.....	14	.....	.5	.4	.....

NOTE.—No gage-height record June 4–6 and 22; discharge estimated.

Monthly discharge of Tujunga Creek near Sunland, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916–17.					1917–18.				
October 28–31	10	8.5	9.62	76.3	October	2.2	0.3	0.74	45.5
November	14	10	13.0	774	November	6.5	1.9	3.67	218
December	288	14	32.8	2,020	December	6	3.0	4.14	255
January	59	31	35.3	2,170	January	5.5	3.6	4.64	285
February	182	25	65.2	3,620	February	340	4.4	41.4	2,300
March	87	32	49.3	3,030	March	1,150	33	246	15,100
April	37	21	25.6	1,520	April	57	24	35.9	2,140
May	23	15	18.0	1,110	May	24	14	19.4	1,190
June	15	3.3	8.07	480	June	12	4.0	7.43	442
July	3.3	1.2	1.99	122	July	6	.5	1.70	105
August	1.9	.3	.60	36.9	August	.5	.4	.45	27.7
September	.8	.4	.49	29.2	September	3.6	.4	.82	48.8
The period	.....	.....	.....	15,000	The year	1,150	.3	30.6	22,200

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HAINES CREEK NEAR TUJUNGA, CALIF.

LOCATION.—In NE. ¼ NE. ¼ sec. 18, T. 2 N., R. 13 W., 800 feet above mouth of canyon and 1½ miles northeast of Tujunga, Los Angeles County.

DRAINAGE AREA.—1.2 square miles (measured on topographic map).

ELEVATION.—About 2,200 feet above sea level.

RECORDS AVAILABLE.—February 7, 1917, to September 30, 1918.

GAGE.—Gurley graph water-stage recorder on right bank just above concrete control, about 800 feet above mouth of canyon. (See Pl. XV, *C*.)

DISCHARGE MEASUREMENTS.—Made by volumetric method, when discharge was very small, and on crest of dam. A bridge has been built 4 feet above dam for use during high water.

CHANNEL AND CONTROL.—Boulders and gravel overlying solid rock; permanent. Both banks are high and fairly clean. A concrete dam, having a maximum height of about 5 feet above bedrock, was built across the channel at downstream face of gage well. A 12-foot concrete wing well was constructed at left end of dam. Crest of dam has a trapezoidal notch 6 inches wide on bottom and 1 foot deep, which makes control more sensitive for low stages. Zero flow occurs at a gage height of 0.23 foot.

EXTREMES OF DISCHARGE.—1917–1918: Maximum stage recorded, 1.37 feet March 10, 1918 (discharge, 6.8 second-feet); minimum stage recorded, 0.32 foot September 20–30, 1917, and August 25 to September 12, 1918 (discharge, 0.03 second-foot).

DIVERSIONS.—About a mile above the station a tunnel has been driven into the stream bed and a 4-inch pipe carries the water past the gage. This water is used for domestic supply at Tujunga. A similar tunnel, a short distance below the station, develops a small supply during the greater part of the year.

REGULATION.—A large number of small check dams, constructed of brush and boulders, have been built across the stream channel in the upper portion of the drainage basin.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Operation of water-stage recorder satisfactory throughout the period. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph. Records excellent.

Discharge measurements of Haines Creek near Tujunga, Calif., for 1917–18.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
Feb. 16	H. J. Tompkins	0.50	0.25	Feb. 22	E. Tompkins	81	1.1
Apr. 2	J. C. Dort	.50	.25	Mar. 7	do	1.12	3.0
12	do	.48	.25	11	C. W. Sopp	1.09	3.4
Nov. 15	H. J. Tompkins	.36	.06	13	E. Tompkins	1.17	3.9
				20	H. J. Tompkins	.88	1.7
				Apr. 10	C. W. Sopp	.65	.6
				Sept. 17	H. J. Tompkins	.34	.05

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Daily discharge, in second-feet, of Haines Creek near Tujunga, Calif., for 1917-18.

Day.	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917.												
1	.....	.....	.....	.....	.....	0.35	0.27	0.17	0.15	0.10	0.06	0.05
2	.....	.....	.....	.....	.....	.35	.27	.17	.17	.10	.06	.05
3	.....	.....	.....	.....	.....	.35	.25	.17	.17	.09	.06	.05
4	.....	.....	.....	.....	.....	.37	.25	.17	.17	.09	.06	.05
5	.....	.....	.....	.....	.....	.37	.23	.17	.15	.09	.06	.05
6	.....	.....	.....	.....	.....	.37	.23	.17	.14	.09	.06	.05
7	.....	.....	.....	.....	0.33	.39	.25	.17	.12	.09	.06	.05
8	.....	.....	.....	.....	.33	.39	.25	.17	.12	.09	.06	.05
9	.....	.....	.....	.....	.35	.39	.27	.17	.14	.07	.06	.05
10	.....	.....	.....	.....	.29	.39	.27	[a] .17	.14	.07	.06	.05
11	.....	.....	.....	.....	.29	.37	.25	.17	.14	.07	.06	.05
12	.....	.....	.....	.....	.31	.37	.23	.17	.12	.09	.06	.05
13	.....	.....	.....	.....	.31	.35	.23	.17	.11	.07	.06	.05
14	.....	.....	.....	.....	.29	.35	.23	.15	.10	.06	.06	.05
15	.....	.....	.....	.....	.27	.33	.23	.15	[a] .10	.06	.06	.05
16	.....	.....	.....	.....	.27	.33	.25	.15	[a] .09	.05	.05	.05
17	.....	.....	.....	.....	.33	.33	.23	.15	.09	.05	.05	.04
18	.....	.....	.....	.....	.27	.33	.23	.18	.09	.05	.05	.04
19	.....	.....	.....	.....	.29	.33	.23	.17	.10	.06	.05	.04
20	.....	.....	.....	.....	.31	.31	.23	.17	.10	.06	.05	.03
21	.....	.....	.....	.....	.41	.31	.23	.17	.10	.06	.05	.03
22	.....	.....	.....	.....	.43	.31	.22	.17	.10	.06	.05	.03
23	.....	.....	.....	.....	.35	.31	.22	.17	.10	.06	.05	.03
24	.....	.....	.....	.....	.35	.31	.22	.17	.10	.06	.05	.03
25	.....	.....	.....	.....	.41	.31	.20	.17	.10	.06	.05	.03
26	.....	.....	.....	.....	.37	.31	.20	.17	.10	.06	.05	.03
27	.....	.....	.....	.....	.35	.29	.20	.17	.10	.06	.05	.03
28	.....	.....	.....	.....	.35	.29	.22	.17	.09	.06	.05	.03
29	.....	.....	.....	.....	.....	.29	.20	.17	.09	.06	.05	.03
30	.....	.....	.....	.....	.....	.29	.18	.17	.07	.06	.05	.03
31	.....	.....	.....	.....	.....	.29	.....	.15	.....	.06	.05	.....
1917–18.												
1	.03	.05	.06	.06	.07	.45	.8	.29	.20	.18	.05	.03
2	.03	.05	.06	.06	.09	.43	.8	.31	.18	.15	.04	.03
3	.03	.05	.07	.06	.09	.41	.75	.31	.17	.14	.04	.03
4	.04	.05	.07	.06	.07	.37	.7	.31	.17	.14	.04	.03
5	.04	.05	.07	.06	.07	.31	.7	.31	.17	.12	.04	.03
6	.04	.09	.07	.06	.07	.25	.7	.31	.17	.12	.04	.03
7	.04	.09	.07	.06	.07	1.3	.65	.31	.17	.11	.04	.03
8	.04	.07	.07	.06	.06	.7	.65	.31	.17	.11	.04	.03
9	.04	.07	.07	.06	.06	.65	.6	.31	.18	.11	.04	.03
10	.04	.07	.07	.06	.06	1.5	.6	.29	.23	.11	.04	.03
11	.04	.07	.07	.06	.06	3.2	.5	.27	.23	.11	.04	.03
12	.04	.07	.07	.06	.06	4.7	.5	.27	.22	.11	.04	.03
13	.04	.06	.07	.06	.06	4.2	.47	.25	.20	.11	.04	.04
14	.04	.06	.07	.06	.06	3.3	.45	.23	.20	.11	.04	.05
15	.04	.06	.06	.07	.06	2.6	.45	.23	.20	.11	.05	.04
16	.04	.06	.06	.07	.06	2.1	.45	.23	.20	.10	.06	.04
17	.05	.07	.06	.07	.10	1.8	.43	.23	.15	.10	.06	.04
18	.05	.07	.06	.07	.10	1.6	.43	.23	.17	.09	.06	.04
19	.05	.06	.06	.07	.10	2.0	.41	.23	.17	.06	.06	.04
20	.04	.06	.06	.07	.12	1.6	.39	.23	.15	.06	.06	.04
21	.04	.06	.06	.06	.31	1.4	.37	.23	.15	.06	.05	.04
22	.04	.07	.06	.06	1.4	1.4	.35	.23	.17	.06	.05	.04
23	.04	.07	.06	.06	.37	1.3	.35	.23	.15	.06	.04	.04
24	.04	.07	.06	.06	.45	1.2	.35	.23	.17	.06	.04	.04
25	.04	.07	.06	.06	.6	1.2	.35	.23	.17	.06	.03	.04
26	.04	.06	.06	.07	.55	1.1	.35	.23	.14	.06	.03	.04
27	.05	.06	.06	.07	.5	1.0	.33	.23	.14	.06	.03	.04
28	.04	.06	.06	.07	.47	.95	.31	.23	.15	.06	.03	.04
29	.04	.06	.06	.07	.....	.95	.31	.23	.15	.06	.03	.04
30	.05	.06	.06	.06	.....	.85	.29	.23	.15	.06	.03	.04
31	.05	.....	.06	.07	.....	.8	.....	.22	.....	.05	.03	.....

[a] Water-stage recorder not in operation; discharge interpolated.

NOTE.—No gage-height record May 4–8; discharge interpolated. Feb. 21–22 and Mar. 7 and 10 hourly discharges were averaged.

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Monthly discharge of Haines Creek near Tujunga, Calif., for 1917–18.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1917.					1917-18.				
February 7-28	0.43	0.27	0.330	14.4	October	0.05	0.03	0.041	2.52
March	.39	.29	.336	20.7	November	.09	.05	.064	3.81
April	.27	.18	.232	13.8	December	.07	.06	.064	3.94
May	.18	.15	.167	10.3	January	.07	.06	.064	3.94
June	.17	.07	.115	6.84	February	1.4	.06	.219	12.2
July	.10	.05	.070	4.30	March	4.7	.25	1.47	90.4
August	.06	.05	.055	3.38	April	.8	.29	.493	29.3
September	.05	.03	.042	2.50	May	.31	.22	.257	15.8
					June	.23	.14	.175	10.4
The period				76.2	July	.18	.05	.094	5.78
					August	.06	.03	.042	2.58
					September	.05	.03	.036	2.14
					The year	4.7	.03	.253	183

ARROYO SECO NEAR PASADENA, CALIF.

LOCATION.—Near south line of sec. 30, T. 2 N., R. 12 W. (unsurveyed), just below trail crossing at forest ranger station in Angeles National Forest, 1½ miles above mouth of Millard Canyon, 3 miles above Devils Gate, and 5½ miles northwest of Pasadena, Los Angeles County.

DRAINAGE AREA.—16.4 square miles (measured on topographic map).

ELEVATION.—About 1,450 feet above sea level.

RECORDS AVAILABLE.—December 1, 1910, to September 30, 1918.

GAGE.—Gurley graph water-stage recorder installed September 30, 1916, on right bank just upstream from staff gage. Original staff was in two sections fastened to an alder tree on right bank 300 feet southeast of ranger station. Original datum has not been maintained. (See Pl. XIV, *C*.)

DISCHARGE MEASUREMENTS.—Made from cable 115 feet below control or by wading.

CHANNEL AND CONTROL.—Solid rock, gravel, and boulders; shifts slightly during high water. A concrete dam extending to bedrock was built across channel 15 feet below recorder well in the fall of 1916. There is a notch in the crest 2 feet wide and 1 foot deep. (See Pl. XIV, *C*.)

EXTREMES OF DISCHARGE.—1910–1918: Maximum stage recorded, 12.5 feet February 20, 1914 (discharge, 5,630 second-feet); minimum stage recorded, 0.77 foot, October 7, 1917 (discharge, 0.07 second-foot).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; since construction of concrete control the gravel shifts during high water. Rating curves usually well defined for low and medium stages. Staff gage read to hundredths usually twice daily. Daily discharge ascertained by applying to the rating table mean daily gage height read from staff gage; since October 1916, mean daily gage height determined by inspecting recorder graph. Records good for low and medium stages; high-water records fair.

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Discharge measurements of Arroyo Seco near Pasadena, Calif., for 1910–1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1910.			
Dec. 1	W. V. Hardy	3.44	1.4
1911.			
Feb. 21	W. V. Hardy	3.78	18
Mar. 1	do	3.85	22
May 2	do	3.47	13
June 21	do	3.30	4.8
Nov. 3	F. C. Ebert	3.14	1.6
3	Lasley Lee	3.14	1.6
1912.			
Jan. 31	F. C. Ebert	3.24	2.2
Mar. 17	do	3.62	20
Apr. 6	do	3.36	8.1
July 8	do	3.10	1.3
Sept. 27	do	3.02	.2
Dec. 24	do	3.23	1.4
1913.			
Feb. 6	F. C. Ebert	3.20	2.6
8	do	3.81	34
Mar. 5	do	3.51	14
Apr. 5	do	3.27	4.2
May 6	do	3.18	1.9
31	do	3.15	1.6
1914.			
Feb. 7	F. C. Ebert	3.93	24
16	do	3.74	14
26	do	4.50	162
Mar. 12	do	3.97	40
30	do	3.81	29
Apr. 13	do	3.58	14
May 4	do	3.55	13
June 2	do	3.38	7.3
Nov. 7	do	3.25	2
1915.			
Feb. 18	F. C. Ebert	3.72	22
25	do	3.84	30
Mar. 15	do	3.56	15
22	do	3.46	11
Apr. 26	do	3.34	7.1
June 15	do	3.22	4.0
July 3	do	3.12	2.6
Nov. 18	do	3.03	1.0
1916.			
Jan. 12	F. C. Ebert	3.55	14
22	do	4.18	64
Feb. 10	do	3.91	35
14	do	3.80	25
Mar. 2	do	3.73	21
30	do	3.58	14
Apr. 7	H. J. Tompkins	3.53	13
20	do	3.47	9.3
May 4	do	3.37	7.7
29	J. C. Dort	3.29	4.8
June 26	H. J. Tompkins	3.12	2.4
July 15	do	3.08	1.4
Oct. 26	do	1.28	2.2
1917.			
Jan. 5	H. J. Tompkins	1.92	8.6
20	do	2.18	26
Feb. 17	do	1.98	14
21	do	2.60	83
28	J. C. Dort	2.24	31
Mar. 6	H. J. Tompkins	2.07	21
30	do	1.86	10
Apr. 14	J. C. Dort	1.83	6.2
26	H. J. Tompkins	1.77	6.0
May 13	do	1.70	4.8
29	do	1.56	4.7
Aug. 27	do	.88	.2
Oct. 16	E. Tompkins	.94	.33
Dec. 21	H. J. Tompkins	1.08	.85
1918.			
Jan. 22	C. W. Sopp	1.12	1.0
Feb. 21	do	2.50	71
22	do	2.90	129
Mar. 7	E. Tompkins	3.64	578
16	C. W. Sopp	2.40	46
23	do	2.15	24
30	do	2.09	14
Apr. 13	H. J. Tompkins	1.92	10
May 6	do	1.72	4.8
10	C. W. Sopp	1.73	4.9
June 5	H. J. Tompkins	1.56	2.3
21	C. W. Sopp	1.50	1.2
July 22	H. J. Tompkins	1.35	.34

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Daily discharge, in second-feet, of Arroyo Seco near Pasadena, Calif., for 1910–1918.

Day.	Dec.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.							
1	1.4	63	19	7.2	3.2	1.3	0.6
2	1.6	62	19	6.8	3.0	1.3	.6
3	1.7	62	18	6.8	2.8	1.3	.6
4	1.8	60	14	6.3	2.5	1.3	.5
5	2.0	54	13	5.8	2.5	1.3	.5
6	2.1	44	11	5.4	2.5	1.2	.5
7	2.1	39	10	5.4	2.2	1.2	.5
8	2.0	34	9.0	5.0	2.0	1.2	.5
9	2.1	25	8.6	5.0	1.8	1.2	.6
10	2.0	25	8.6	4.5	1.7	1.2	.6
11	2.1	24	8.1	4.2	1.6	1.2	.6
12	2.0	22	8.1	4.0	1.5	1.2	.6
13	2.3	22	7.6	4.0	1.5	1.2	.6
14	2.8	21	8.6	4.0	1.5	1.3	.6
15	3.9	20	8.6	4.0	1.5	1.2	.6
16	4.2	19	8.6	3.8	1.5	1.1	.6
17	4.2	18	8.6	3.8	1.4	1.2	.6
18	4.6	16	8.6	3.8	1.4	1.1	.6
19	4.6	15	8.1	3.8	1.4	1.0	.6
20	5.0	14	8.0	3.8	1.5	1.0	.6
21	5.0	14	7.9	3.8	1.4	.8	.6
22	5.6	14	7.9	3.5	1.4	.8	.6
23	5.6	14	7.8	3.5	1.4	.8	.6
24	6.0	14	7.7	3.5	1.5	.8	.6
25	7.0	13	7.6	3.5	1.5	.8	.7
26	7.0	21	7.5	3.2	1.5	.8	.7
27	7.5	21	7.4	3.2	1.5	.8	.7
28	7.5	21	7.4	3.2	1.5	.7	1.0
29	7.0	20	7.3	3.2	1.5	.6	60
30	7.0	20	7.2	3.2	1.5	.6	31
31	7.5	.....	7.2	.....	1.4	.6	.....

NOTE.—Daily discharge determined from two fairly well defined rating curves applicable as follows: Dec. 1, 1910, to Mar. 10, 1911; and Mar. 11 to Sept. 30, 1911. No record during Jan. 1 to Mar. 31, 1911. Discharge interpolated on days for which no gage height is given during Dec., 1910, and Apr. 1 to Dec. 31, 1911.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	[a]17	2.2	1.6	.....	.....	.....	.....	.....	14	5.4	0.6	0.5
2	3.2	2.5	1.6	1.7	.....	.....	.....	.....	[a]14	5.4	.6	.6
3	3.0	2.0	[a]1.6	1.7	.....	.....	.....	.....	14	5.0	.6	.5
4	2.8	1.9	1.7	1.8	.....	.....	.....	.....	14	4.5	.6	.5
5	2.0	[a]1.9	1.6	1.8	.....	.....	.....	.....	14	4.5	.6	.5
6	1.9	1.9	2.2	1.8	.....	.....	.....	.....	13	4.2	.6	.6
7	2.2	1.8	2.0	1.9	.....	.....	.....	.....	13	4.2	.6	.6
8	[a]2.0	1.8	2.0	1.8	.....	.....	.....	.....	12	4.2	.6	.5
9	1.9	1.7	2.0	1.8	.....	.....	.....	.....	[a]12	4.0	.6	.6
10	1.8	3.0	[a]2.0	1.8	.....	.....	.....	.....	12	3.8	.6	.5
11	1.7	2.5	1.9	1.8	.....	.....	.....	.....	12	3.5	.6	.5
12	1.5	[a]2.4	1.8	1.9	.....	.....	.....	.....	12	3.5	.6	.6
13	1.5	2.2	1.8	.....	.....	.....	.....	.....	12	3.5	.6	.6
14	1.9	2.0	1.8	.....	.....	.....	.....	.....	11	3.2	.6	.5
15	[a]1.6	1.9	1.7	.....	.....	.....	.....	.....	10	3.0	.6	.5
16	1.4	1.9	1.6	.....	.....	.....	.....	.....	10	2.8	.5	.5
17	1.4	1.8	[a]1.6	.....	.....	.....	.....	.....	9.5	2.5	.5	.5
18	1.4	1.8	1.7	.....	.....	.....	.....	.....	9	2.2	.5	.5
19	1.4	1.8	1.7	.....	.....	.....	.....	.....	[a]8.7	2.0	.5	.5
20	1.4	1.7	1.7	.....	1.5	.....	.....	.....	[a]8.4	1.8	.5	.5
21	1.5	1.6	1.7	.....	1.5	.....	.....	.....	8.1	1.7	.5	.5
22	1.5	1.5	1.6	.....	.....	.....	.....	.....	7.2	1.6	.5	.5
23	1.6	1.5	[a]1.6	.....	1.5	.....	.....	.....	6.8	1.5	.5	.5
24	1.7	1.5	[a]1.6	.....	1.5	.....	.....	.....	6.8	1.4	[a].5	.6
25	1.7	1.4	[a]1.6	.....	.....	.....	.....	15	6.3	1.3	[a].5	.....
26	1.8	1.4	[a]1.5	.....	1.5	.....	.....	[a]15	[a]6.0	1.2	[a].6	.....
27	2.0	1.5	[a]1.5	.....	1.5	.....	.....	15	5.8	1.0	[a].6	.....
28	2.5	1.5	[a]1.5	.....	1.5	.....	.....	15	5.8	.9	.6	.....
29	2.2	1.6	[a]1.5	.....	1.5	.....	.....	15	5.4	.8	.5	.....
30	2.0	1.5	[a]1.5	.....	.....	.....	.....	15	5.4	.8	.6	.....
31	2.2	.....	[a]1.5	3.0	.....	.....	.....	15	.....	.6	.6	.....

[a] Estimated.

NOTE.—Daily discharge determined from a fairly well defined rating curve for 1911 and from a well defined rating curve for low water for 1912. No estimates made for gage heights over 3.6 feet.

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Daily discharge, in second-feet, of Arroyo Seco near Pasadena, Calif., for 1910–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	0.3	0.5	0.8	0.7	.....	.....	5.0	2.5	1.9	1.2	1.0	0.7
2	.6	.5	.8	.7	.....	.....	5.0	2.5	2.0	1.2	1.2	1.0
3	.8	.6	.6	.7	.....	.....	5.0	2.5	2.0	1.0	1.2	1.0
4	2.8	.6	.7	.6	.....	.....	5.0	2.5	2.2	1.0	1.2	.7
5	1.8	.6	.7	.5	.....	.....	5.0	2.5	2.2	1.0	1.0	.3
6	1.0	.6	.6	.6	.....	.....	5.0	2.2	1.9	1.0	.9	.2
7	.9	.6	.6	.6	.....	.....	5.0	2.5	2.0	1.0	.8	.2
8	.9	.5	.6	.8	.....	.....	4.8	2.5	2.0	1.0	.8	.3
9	.8	.6	.8	1.2	.....	.....	4.5	2.5	2.0	1.0	.9	.2
10	.9	1.0	.8	1.6	.....	.....	4.3	2.5	1.8	1.0	.9	.2
11	.6	.8	.7	1.0	.....	.....	4.0	2.5	1.9	1.0	.8	.2
12	.5	.8	.7	.9	.....	.....	3.8	2.5	1.6	1.0	.8	.1
13	.6	.6	.6	.9	.....	.....	3.8	2.4	1.3	1.0	.8	.1
14	.5	.6	.6	.9	.....	.....	3.8	2.2	1.3	1.0	.7	.1
15	.4	.6	.8	72	.....	.....	3.8	2.2	1.3	1.0	.5	.1
16	.4	.6	.7	16	.....	.....	3.8	2.2	1.0	1.0	.3	.1
17	.4	.5	.6	30	.....	.....	4.2	2.2	1.0	1.0	.3	.1
18	.4	.5	.6	8.2	.....	.....	4.6	2.2	1.0	.9	.3	.1
19	.4	.6	.6	.....	.....	.....	5.0	2.2	1.2	.7	.3	.1
20	.5	.6	.6	.....	.....	.....	5.0	2.4	1.3	.7	.3	.1
21	.6	.7	.6	.....	.....	.....	5.0	2.4	1.0	.8	.3	.1
22	.5	.7	.6	.....	.....	.....	4.4	2.2	1.0	.7	.3	.1
23	.6	.7	.6	.....	.....	.....	3.8	2.2	1.0	.7	.2	.1
24	.6	.8	.6	.....	.....	.....	3.4	2.2	1.0	.5	.2	.2
25	.5	.8	.6	.....	.....	.....	2.9	2.4	1.0	.8	.2	.2
26	.6	.8	.5	.....	.....	.....	2.5	2.2	1.8	1.0	.2	.2
27	.5	.8	.5	.....	.....	.....	2.5	2.4	3.8	1.0	.2	.2
28	.5	.7	.6	.....	.....	.....	2.5	3.0	2.5	1.0	.2	.2
29	.6	.7	.6	.....	.....	.....	2.5	2.4	1.6	1.0	.2	.2
30	.5	.8	.6	.....	.....	.....	2.5	2.2	1.0	1.0	.2	.2
31	.5	.....	.6	.....	.....	.....	.....	1.9	.....	1.0	.2	.....

NOTE.—Daily discharge determined from two fairly well defined rating curves applicable Oct. 1, to Jan. 15, and Jan. 16 to Sept. 30. Discharge estimated Sept. 12 to 23; discharge interpolated for other days for which record is not given.

1913–14.												
1	.2	1.5	2	11	60	87	21	17	5.5	3	1.5	2
2	.2	1.5	2	8	51	95	21	16	6	2.5	1.5	1.5
3	.2	1.5	2	5.5	38	104	20	15	6.5	2.5	1.5	1.5
4	.2	1.5	2	4	36	104	20	13	7	2.5	1.5	2
5	.2	2	2	3	32	92	20	12	7	2.5	1.5	2
6	.4	2	2	2.5	29	92	19	12	7.5	2.5	1.5	2
7	.4	2	2	2.5	24	72	19	11	8	2.5	1.5	1.5
8	.4	2	2	2.5	23	62	19	11	8	2.5	1.5	1.5
9	.4	2	2	2.5	21	54	19	11	8	2.5	1.5	1.5
10	.4	2	2.5	2.5	20	54	18	10	8	2.5	1.5	1.5
11	.4	2	2.5	2.5	18	54	18	10	7.5	2.5	1.5	1.5
12	.4	4.5	2.5	2.5	16	47	17	10	7	2.5	1.5	2
13	.4	20	2.5	2.5	15	47	16	9	6.5	2	1.5	2
14	.3	12	3	4	14	33	15	9	6	2	1.5	2
15	.4	5.5	3	24	14	32	15	9	5.5	2	1.5	2
16	.4	4	3	67	14	31	14	9	5.5	2.5	1.5	2
17	.5	3	4	160	14	31	13	8.5	5	2.5	1.5	2
18	.4	7	4	497	684	27	13	8	5	2.5	1.5	2
19	4	27	4.5	39	712	27	12	7.5	4.5	2.5	1.5	1.5
20	.4	20	5	19	3,690	27	12	7.5	4.5	2	1.5	1.5
21	.4	8	5.5	13	1,820	26	17	7	5	2	1.5	1.5
22	.5	4.5	5.5	10	852	26	21	7	5	2	1.5	1.5
23	.6	3.5	6	8	528	25	18	7	5	2	1.5	1.5
24	.7	2.5	6.5	19	349	24	18	7	4.5	2	1.5	1.5
25	.7	2	7	386	230	24	17	6	4.5	2	1.5	1.5
26	.7	2	7.5	1,750	145	24	15	6	4	2	1.5	2
27	.8	2	8	500	99	24	13	6	3.5	2	1.5	2
28	.9	2	8.5	257	79	24	11	6	3	2	1.5	2
29	1	2	9.5	132	.....	27	18	6	3	1.5	1.5	2
30	1	2	15	87	.....	27	18	5.5	2.5	1.5	1.5	2
31	1.5	.....	16	65	.....	27	.....	5.5	.....	1.5	2	.....

NOTE.—Discharge determined from three rating curves fairly well defined below 400 second-feet.

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Daily discharge, in second-feet, of Arroyo Seco near Pasadena, Calif., for 1910–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	1	2.5	1	1	22	30	10	17	7	2	1	.8
2	1	2	2	1	117	29	10	16	7	2	.9	.8
3	1.5	1.5	1.5	1	435	26	10	17	6.5	2	.9	.8
4	1.5	1	1	1	72	25	11	21	6.5	2	.8	.8
5	1.5	1	1	1	26	23	12	22	6	2	.8	.8
6	1.5	1	1	1	21	23	10	18	6	2	.8	.8
7	1	.8	1	1	18	22	9	16	6	1.5	.8	.8
8	1.5	.8	1	1	16	21	9	15	6	1.5	.8	.8
9	1.5	.9	1.5	1	200	19	9	14	6	1.5	.8	.8
10	1.5	.8	3.5	1	238	18	9	13	6	1.5	.8	.8
11	1.5	.8	3.5	1	130	17	9	12	6	1.5	.8	.8
12	1.5	.7	3	1	62	16	8.5	12	6	1.5	.8	.8
13	1.5	.5	2.5	1	50	16	9	12	5.5	1.5	.8	.8
14	1.5	.8	2.5	1	41	16	10	11	5.5	1.5	.7	.8
15	1.5	.3	2.5	1	26	15	9	11	5.5	1.5	.7	.8
16	1.5	.3	4	1.5	24	15	8	11	5	1.5	.7	.8
17	1.5	.2	28	1.5	23	14	8	11	5	1.5	.6	.8
18	1.5	.2	30	1	22	14	7.5	10	4.5	1	.7	.8
19	1.5	.3	32	1	21	14	7	10	4	1	.6	.8
20	1.5	.3	31	1	26	13	6.5	9.5	3.5	1	.6	.8
21	2	.3	33	1	23	13	7.5	9	3.5	1	.5	.8
22	2	.3	41	1	23	12	8	9	3.5	1	.5	.8
23	1.5	.3	42	1	22	12	8	9	3.5	1	.8	.8
24	1.5	.3	36	1	32	11	7.5	9	3	1	.9	.9
25	1.5	.3	30	4	37	11	7.5	8.5	3	1	.8	.9
26	1.5	.3	25	3	26	11	7.5	8	3	1	.8	.9
27	1.5	.3	17	3.5	20	11	7.5	8	2.5	1	.8	.9
28	1.5	.3	11	12	22	16	10	8	2.5	1	.8	.9
29	2.5	.4	6.5	349	.....	12	17	7.5	2.5	1	.7	.9
30	2.5	.5	3.5	223	.....	11	17	7.5	2	1	.7	.8
31	2.5	.....	2.5	77	.....	10	.....	7.5	.....	1	.7	.....

NOTE.—Discharge determined from two rating curves as follows: Oct. 1 to Feb. 3, poorly defined; Feb. 4 to Sept. 30, well defined between 1 and 200 second-feet.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	.8	.8	.....	.....	.....	.....	11	9	5	1.5	0.8	0.8
2	.8	.8	.....	.....	.....	21	8.5	9	4.5	1.5	.8	.....
3	.8	.8	.....	.....	.....	.....	9.5	9	4.5	2	.8	.....
4	.8	.8	.....	.....	.....	.....	10	9	4	2	.9	.....
5	.8	.9	.....	.....	.....	.....	11	6	4	1.5	1	.....
6	.8	3	.....	.....	.....	.....	12	7	4	1.5	1	.....
7	.8	2	.....	.....	.....	.....	11	7	3.5	1.5	1	.....
8	.8	2.5	.....	.....	.....	.....	11	6.5	3.5	1.5	.6	.....
9	.8	3.5	.....	.....	.....	.....	11	6	3	1.5	.6	.....
10	.8	3	.....	.....	35	.....	11	5.5	3	1.5	.8	.....
11	.8	3	.....	.....	.....	.....	11	5.5	3.5	1.5	1	.....
12	.8	2	.....	14	.....	.....	11	6	3	1.5	.8	.....
13	.8	2	.....	.....	.....	.....	10	6	3	1.5	.8	.....
14	.8	2	.....	.....	25	.....	10	5.5	3	1.5	1	.....
15	.8	2	.....	.....	.....	.....	10	5.5	2.5	1.5	1	.....
16	.8	1.5	.....	.....	.....	.....	10	5	2.5	1.5	1	.....
17	.8	1.5	.....	1,930	.....	.....	10	5	2.5	1.5	1	.....
18	.7	1.5	.....	.....	.....	.....	10	5.5	2.5	1.5	1	.....
19	.7	1.5	.....	.....	.....	.....	10	8	2.5	1.5	1	.....
20	.7	1.5	.....	.....	.....	.....	10	6.5	3	1.5	1	.....
21	.7	1.5	.....	.....	.....	.....	10	6	3	1	1.5	.....
22	.7	1.5	.....	58	.....	.....	9	5.5	3	1.5	1	.....
23	.7	1.5	.....	42	.....	.....	8	5	2.5	1	1	.....
24	.7	1.5	.....	51	.....	.....	8	6	2.5	1	1	.....
25	.7	1.5	.....	65	.....	.....	8	6	2.5	1	1	.....
26	.7	1.5	.....	.....	.....	.....	8	5	2.5	1	.8	.....
27	.7	1.5	.....	.....	.....	.....	7.5	5	2.5	1	.8	.....
28	.7	1.5	.....	.....	.....	.....	8	5	2.5	1	.7	.....
29	.8	1.5	.....	.....	.....	.....	8.5	5	2	.9	.6	.....
30	.8	1.5	.....	.....	.....	14	9	5	2	1	.7	.....
31	.8	.....	.....	.....	.....	.....	.....	5	.....	.8	.7	.....

NOTE.—Discharge estimated mostly by interpolation, Nov. 14–17, 21, 28–30; Apr. 1, 3, 4, 11–14, 21–23, 29; and May 9. Discharge July 6–13 estimated from observers' notes and rainfall record.

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Daily discharge, in second-feet, of Arroyo Seco near Pasadena, Calif., for 1910–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	3.1	2.1	2.2	8.5	11	33	9.5	6	4.2	0.8	0.4	0.2
2	40	2.2	2.9	8	11	30	9.5	5.5	3.7	.8	.4	.1
3	15	2.2	8	10	11	26	8	5.5	3.6	.8	.5	.1
4	6.5	2.7	6.5	9	10	22	7.5	5.5	3.6	.7	.5	.1
5	4.5	4.3	4.3	8.5	10	21	7.5	5	3.6	.7	.5	.1
6	10	3.5	3.6	8	10	20	7	5	3.4	.7	.5	.1
7	9	3.1	3.1	8	10	19	7	5	3.2	.7	.4	.2
8	6	3.0	2.9	7.5	9.5	18	7	5.5	2.9	.6	.4	.2
9	5	2.9	2.9	7.5	9	20	8	5.5	2.9	.6	.4	.2
10	8	2.8	2.8	7	9	19	8	5.5	2.7	.6	.4	.1
11	8.5	2.5	2.7	7	9	17	7.5	5.5	2.7	.5	.4	.1
12	6.5	2.6	2.7	7.5	9	16	7	5	2.6	.6	.4	.1
13	5.5	2.7	2.6	9	9	16	6.5	5	2.2	.6	.4	.1
14	4.8	2.6	2.6	8	9	16	6.5	5	2.0	.6	.5	.1
15	4.5	2.7	2.5	8	8.5	16	7	5	1.6	.7	.5	.1
16	3.6	2.7	2.5	10	8	14	8	4.9	1.4	.7	.4	.1
17	3.3	2.7	2.5	10	14	14	8	4.9	1.1	.7	.4	.1
18	3.0	2.6	2.5	12	10	13	7.5	7	1.0	.6	.4	.1
19	2.9	2.6	2.5	40	10	13	7	6	1.0	.6	.3	.1
20	2.9	2.5	2.6	30	34	12	6.5	5	1.1	.6	.3	.1
21	2.6	2.3	2.7	25	72	12	6	5	1.1	.5	.3	.2
22	2.7	2.2	2.7	21	120	12	6	5	1.1	.5	.3	.2
23	2.9	2.2	2.9	20	66	12	6	5	1.1	.5	.3	.2
24	2.9	2.2	272	18	46	11	6	5.5	1.0	.5	.3	.2
25	2.2	2.2	59	17	63	11	5.5	5.5	.9	.5	.3	.2
26	2.2	2.2	26	14	50	11	6	5	1.0	.5	.3	.2
27	2.2	2.2	12	13	40	11	6	5	1.0	.5	.3	.2
28	2.3	2.2	10	12	36	10	7	5	.9	.4	.2	.1
29	2.5	2.2	9	12	.....	10	6.5	4.7	.9	.4	.2	.1
30	2.4	2.2	9	12	.....	10	6	4.8	1.0	.4	.2	.1
31	2.2	.....	8.5	12	.....	10	.....	4.8	.....	.4	.2	.....

NOTE.—Water-stage recorder not in operation Dec. 11–14 and Sept. 21–30; discharge interpolated Dec. 24, hourly discharges averaged.

1917–18.												
1	.1	.2	.9	.9	1.1	9.5	13	4.9	2.9	1.4	.2	.2
2	.1	.2	.9	.9	1.1	8	14	4.4	2.6	1.3	.2	.2
3	.1	.2	.9	.9	1.1	7	13	4.2	2.5	1.2	.2	.2
4	.1	.4	.9	1.0	1.1	6	13	4.2	2.5	1.1	.2	.2
5	.1	.4	.9	.8	1.1	6.5	12	4.4	2.4	1.0	.2	.2
6	.1	.6	.9	.8	1.1	13	12	4.7	2.3	.9	.2	.2
7	.1	.5	.9	.8	1.5	246	12	4.7	2.2	.7	.2	.2
8	.1	.5	.9	.9	1.1	65	11	5.5	2.2	.6	.2	.2
9	.1	.4	.8	.9	1.0	32	11	5.5	1.9	.5	.2	.2
10	.1	.4	.8	.9	1.0	172	11	5.0	1.8	.4	.3	.2
11	.1	.5	.8	1.0	1.0	342	10	4.7	1.9	.4	.3	.2
12	.2	.5	.8	1.0	1.0	314	10	3.9	1.8	.5	.3	.2
13	.3	.5	.8	1.3	1.0	160	10	3.7	1.7	.6	.3	.2
14	.3	.5	.9	1.1	1.0	86	9	3.6	1.6	.6	.4	1.1
15	.4	.5	.8	1.1	1.0	59	8.5	3.4	1.5	.6	.5	.7
16	.4	.6	.9	1.1	1.0	46	8	3.6	1.4	.5	.5	.6
17	.4	.5	.9	1.1	1.7	38	7.5	3.7	1.4	.5	.5	.6
18	.3	.5	.9	1.1	3.4	32	7	3.7	1.3	.4	.4	.5
19	.3	.5	.9	1.0	2.4	44	6.5	3.7	1.5	.4	.4	.5
20	.2	.5	.9	1.1	3.9	40	6.5	3.6	1.5	.4	.4	.5
21	.2	.5	.9	1.1	45	33	6.5	3.6	1.5	.3	.4	.5
22	.2	.5	.9	1.1	107	28	7	3.6	1.4	.3	.3	.5
23	.2	.5	.9	1.1	32	24	7	3.4	1.4	.4	.3	.5
24	.2	.6	.9	1.0	17	20	7	3.4	1.3	.3	.3	.5
25	.2	.7	.9	1.1	27	19	7	3.4	1.3	.3	.2	.5
26	.2	.9	.9	1.1	32	18	7	3.4	1.2	.4	.2	.5
27	.3	.8	.9	1.1	19	17	7	3.2	1.1	.4	.2	.6
28	.3	.9	.9	1.1	17	16	7	3.9	1.1	.3	.2	.6
29	.3	1.0	1.0	1.1	.....	15	6.5	3.6	1.0	.3	.2	.4
30	.3	.9	1.0	1.1	.....	14	5.5	3.4	1.1	.2	.2	.4
31	.3	.....	1.0	1.1	.....	14	.....	3.1	.....	.2	.2	.....

NOTE. No gage-height record Oct. 1–5, 18, 19, 26, and Sept. 24–27; discharge estimated. Mar. 7 and 10 hourly discharges were averaged.

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Monthly discharge of Arroyo Seco near Pasadena, Calif., for 1910–1918.

[Drainage area, 16.4 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1910–11.						
December	7.5	1.4	4.10	0.250	0.29	252
April	63	13	27.7	1.69	1.89	1,650
May	19	7.2	9.55	.582	.67	587
June	7.2	3.2	4.37	.266	.30	260
July	3.2	1.4	1.78	.109	.13	109
August	1.3	.6	1.04	.063	.07	64
September	60	.5	3.60	.220	.25	214
The period						2,880
1911–12.						
October	17	1.4	2.38	.145	.17	146
November	3.0	1.4	1.86	.113	.13	111
December	2.2	1.5	1.70	.104	.12	105
May 25–31	15	15	15.0	.915	.24	208
June	14	5.4	9.94	.606	.68	591
July	5.4	.6	2.77	.169	.19	170
August	.6	.5	.56	.034	.04	34.4
September 1–24	.6	.5	.53	.032	.03	25.2
1912–13.						
October	2.8	.3	.69	.042	.05	42
November	1.0	.5	.66	.040	.04	39
December	.8	.5	.64	.039	.04	39
January 1–18	72.0	.5	7.66	.467	.31	273
April	5.0	2.5	4.08	.249	.28	243
May	3.0	1.9	2.36	.144	.17	145
June	3.8	1.0	1.62	.099	.11	96
July	1.2	.5	.94	.057	.07	58
August	1.2	.2	.56	.034	.04	34
September	1.0	.1	.25	.015	.02	15
1913–14.						
October	1.5	.2	.51	.031	.04	31
November	2.7	1.5	5.12	.312	.35	305
December	16	2	4.82	.294	.34	296
January	1,750	2.5	132	8.05	9.28	8,120
February	3,690	14	344	21.00	21.87	19,100
March	104	24	46.8	2.85	3.29	2,880
April	21	11	16.9	1.03	1.15	1,010
May	17	5.5	9.18	.560	.65	564
June	8	2.5	5.62	.343	.38	334
July	3	1.5	2.23	.136	.16	137
August	2	1.5	1.52	.093	.11	93
September	2	1.5	1.77	.103	.12	105
The year	3,690	.2	45.5		37.74	33,000
1914–15.						
October	2.5	1.0	1.58	.096	.11	97
November	2.5	.2	.67	.041	.05	40
December	42	1.0	12.9	.787	.91	793
January	349	1.0	22.5	1.37	1.58	1,380
February	435	16	64.1	3.91	4.07	3,560
March	30	10	16.6	1.01	1.16	1,020
April	17	6.5	9.30	.567	.63	553
May	22	7.5	11.9	.726	.84	732
June	7.0	2.0	4.75	.290	.32	283
July	2.0	1.0	1.37	.084	.10	84
August	1.0	.5	.75	.046	.05	46
September	.9	.8	.82	.050	.06	49
The year	435	0.2	11.9	.726	9.88	8,640
1915–16.						
October	.8	.7	.76	.046	.05	47
November	3.5	.8	1.72	.105	.12	102
April	12	7.5	9.73	.593	.66	579
May	9	5	6.16	.376	.43	379
June	5	2	3.07	.187	.21	183
July	2	.8	1.36	.083	.10	84
August	1.5	.6	.89	.054	.06	55
September			[a] .83	[a] .051	[a] .06	[a] 49

[a] Estimated.

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Monthly discharge of Arroyo Seco near Pasadena, Calif., for 1910–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1916–17.						
October	40	2.2	5.80	0.354	0.41	357
November	4.3	2.1	2.57	.157	.18	153
December	272	2.2	15.4	.939	1.08	947
January	40	7	12.9	.787	.91	798
February	120	8	25.5	1.55	1.61	1,420
March	33	10	16.0	.976	1.13	984
April	9.5	5.5	7.05	.430	.48	420
May	7	4.7	5.25	.320	.37	323
June	4.2	.9	2.02	.123	.14	120
July	.8	.4	.590	.036	.04	36.3
August	.5	.2	.365	.022	.03	22.4
September	.3	.1	.140	.0085	.01	8.3
The year	272	.1	7.71	.470	6.39	5,580
1917–18.						
October	.4	.1	.213	.013	.01	13.1
November	1.0	.2	.540	.033	.04	32.1
December	1.0	.8	.890	.054	.06	54.7
January	1.3	.8	1.02	.062	.07	62.7
February	107	1.0	11.6	.707	.74	644
March	342	6	62.7	3.82	4.40	3,860
April	14	5.5	9.08	.554	.62	530
May	5.5	3.1	3.97	.242	.28	244
June	2.9	1.0	1.71	.104	.12	102
July	1.4	.2	.561	.034	.04	34.4
August	.5	.2	.284	.017	.02	17.5
September	1.1	.2	.403	.025	.03	24.0
The year	342	.1	7.77	.474	6.43	5,620

EATON CREEK NEAR PASADENA, CALIF.

LOCATION.—Near line between secs. 2 and 11, T. 1 N., R. 12 W., at mouth of canyon just above Mount Wilson toll bridge, about 4 miles northeast of Pasadena, Los Angeles County.

DRAINAGE AREA.—6.5 square miles (measured on topographic map.)

RECORDS AVAILABLE.—March 1 to September 30, 1918.

GAGE.—Gurley graph water-stage recorder with temporary well and house, on left bank just above toll bridge.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Gravel and boulders, fairly permanent. (See Pl. XIV, *B*, p. 423.)

EXTREMES OF DISCHARGE.—Maximum stage, from water-stage recorder, 3.47 feet at 4 a. m. March 11 (discharge, 168 second-feet); no flow May 13 to September 30.

DIVERSIONS.—The Precipice Canyon Water Co. diverts above the station; see monthly discharge, page 465.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during period. Rating curve fairly well defined throughout. Daily discharge ascertained by applying to the rating table mean daily gage height determined by inspecting recorder graph except on March 7, when hourly discharge was averaged. Records good.

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Discharge measurements of Eaton Creek near Pasadena, Calif., for the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 22	C. W. Sopp	1.98	41	Mar. 23	H. J. Tompkins	1.48	10
25	E. Tompkins	1.37	8.1	29	do	1.24	4.2
Mar. 1	C. W. Sopp	1.12	2.3	Apr. 5	do	1.20	3.1
4	Ebert and Sopp	.88	.55	12	do	1.10	2.3
11	Sopp and Tompkins	2.44	76	20	do	.98	.85
16	H. J. Tompkins	1.66	18	26	do	.98	1.2

Daily discharge, in second-feet, of Eaton Creek near Pasadena, Calif., for the year ending Sept. 30, 1918.

Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.
1	2.3	3.6	0.25	11	105	2.3	0.02	21	13	0.7	.....
2	1.9	3.6	.1	12	77	1.9	.01	22	12	.7	.....
3	1.2	3.4	.15	13	63	2.4	.....	23	11	.8	.....
4	.6	3.4	.3	14	41	2.3	.....	24	8.5	.9	.....
5	.7	3.4	.35	15	28	1.8	.....	25	8	1.0	.....
6	4.6	3.3	.25	16	19	1.7	.....	26	7.5	1.0	.....
7	60	3.1	.15	17	17	1.4	.....	27	7	.9	.....
8	38	2.8	.05	18	14	1.1	.....	28	5	.7	.....
9	19	2.4	.05	19	19	1.5	.....	29	4.4	.5	.....
10	36	2.3	.04	20	15	.8	.....	30	4.0	.4	.....
								31	3.8	.....	.....

NOTE.—Gage-height record started Mar. 1. Discharge Feb. 22 and 24 same as measurements made on those dates. No flow May 13 to Sept. 30.

Monthly discharge of Eaton Creek near Pasadena, Calif., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
March	105	0.6	20.9	1,290	August	0.00	0.00	0.00	0.00
April	3.6	.4	1.87	111	September	.00	.00	.00	.00
May	.35	.00	.055	3.38					
June	.00	.00	.00	.00	The period	.....	.....	.....	1,400
July	.00	.00	.00	.00					

NOTE.—Discharge of Precipice Canyon Water Co.'s diversion should be added to above table to give total run-off of Eaton Creek. For monthly discharge of this diversion see following table.

Monthly discharge of Precipice Canyon Water Co.'s, diversion near Pasadena, Calif., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet (mean).	Run-off (total in acre-feet).	Month.	Discharge in second-feet. (mean).	Run-off (total in acre feet).
March	2.40	148	August	0.54	33
April	2.00	119	September	.51	30
May	2.80	172			
June	1.59	95	The period	5	647
July	.82	50			

NOTE.—Table compiled by U. S. Geological Survey from records submitted by W. I. Allen, manager of Precipice Canyon Water Co.

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SANTA ANITA CREEK NEAR SIERRA MADRE, CALIF.

LOCATION.—In SW. ¼ NE. ¼ sec. 10, T. 1 N., R. 11 W., at head of what are known locally as "Hermit's Falls," about 4 miles northeast of Sierra Madre, Los Angeles County.

DRAINAGE AREA.— 10.5 square miles (measured on topographic map).

ELEVATION.—About 1,400 feet above sea level.

RECORDS AVAILABLE.—July 31, 1916, to September 30, 1918.

GAGE.—Stevens water-gage recorder on right bank of pool at head of Hermit's Falls. (See Pl. XI, *C*, p. 236.)

DISCHARGE MEASUREMENTS.—Made from cable 300 feet below gage or by wading at lower end of gage pool.

CHANNEL AND CONTROL.—Channel at gage is pool in bedrock; is rough and steep above and below pool. Both banks are high, clean, and not subject to overflow. Control, which is bedrock, is the same for all stages and is permanent. Zero flow, stage 0.47 foot.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage from water-stage recorder, 4.75 feet March 11, 1918 (discharge, 248 second-feet); minimum stage from water-stage recorder, 0.74 foot September 11–12, 1918 (discharge, 0.3 second-foot).

DIVERSIONS.—None above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Water-stage recorder not operating satisfactorily during November and December, 1916, and January, 1917. Mean daily gage height determined by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair for period when water-stage recorder was not operating satisfactorily; remainder of record good.

Discharge measurements of Santa Anita Creek near Sierra Madre, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Apr. 13	H. J. Tompkins		14	Mar. 2	J. C. Dort	1.74	26
18	do		15	Apr. 18	H. J. Tompkins	1.22	5.5
May 3	do		10	Sept. 4	do	.83	.5
24	J. C. Dort		7.8	28	do	.78	.3
June 16	do		4.4	Dec. 22	do	.86	.9
29	H. J. Tompkins		3.8	1918.			
Aug. 24	do	0.98	1.7	Jan. 15	Tompkins and Sopp	.89	.95
Sept 24	do	.98	1.8	Feb. 26	C. W. Sopp	1.55	19
Oct. 24	do	1.05	2.9	Mar. 4	H. J. Tompkins	1.14	3.8
1917.				27	do	1.50	15
Feb. 3	H. J. Tompkins	1.22	5.2	Apr. 9	do	1.30	8.5
20	do	1.59	18	June 4	do	1.05	2.9
22	do	2.89	93	July 6	do	.91	1.3
22	do	2.85	91	Aug. 2	do	.89	.44
23	do	2.32	50	Sept. 3	do	.77	.55
23	do	2.31	55				

Daily discharge, in second-feet, of Santa Anita Creek near Sierra Madre, Calif., for 1916–1918.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1916.			1916.			1916.		
1	2.3	1.7	11	2.3	1.7	21	2.4	1.6
2	2.1	1.7	12	2.3	1.6	22	2.3	*1.7
3	2.1	1.8	13	2.3	1.6	23	2.1	*1.7
4	2.1	1.8	14	2.3	1.6	24	1.9	1.8
5	2.1	1.8	15	2.3	1.6	25	1.7	1.8
6	2.1	1.9	16	2.4	1.6	26	1.7	1.9
7	2.1	1.9	17	2.4	1.6	27	1.7	1.7
8	2.1	1.8	18	2.5	1.6	28	1.7	1.6
9	2.1	1.8	19	2.3	1.6	29	1.7	1.6
10	2.3	1.8	20	2.4	1.6	30	1.7	2.1
						31	1.7	

* No gage-height record, discharge interpolated.

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Daily discharge, in second-feet, of Santa Anita Creek near Sierra Madre, Calif., for 1916–1918—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	7	2.8	2.1	5.5	6	29	6.5	4.5	3.6	1.5	1.0	0.6
2	32	2.8	2.5	5.5	5.5	25	6.5	4.3	3.2	1.5	.9	.6
3	8	2.8	6.5	5.5	5.5	22	6	4.3	3.0	1.5	.8	.6
4	5	2.8	3.6	6.5	5	20	6	4.3	3.3	1.4	.8	.6
5	4.5	3.0	2.9	6	4.8	19	5.5	4.2	3.2	1.6	.8	.6
6	9	3.0	2.8	5	4.8	17	5.5	3.8	3.0	1.7	.8	.5
7	5.5	2.8	2.8	4.5	4.7	16	5.5	4.0	2.9	1.7	.8	.5
8	4.7	2.8	2.8	4.5	4.5	15	5.5	4.5	2.9	1.6	.8	.5
9	4.3	2.8	2.7	4.0	4.5	17	7	4.5	2.8	1.3	.7	.5
10	6	2.8	2.7	4.0	4.5	16	6.5	4.3	2.8	1.3	.7	.4
11	4.7	2.8	2.7	4.5	4.3	15	6	4.3	2.8	1.3	.8	.4
12	4.3	3.0	2.6	4.5	4.3	13	5.5	4.2	2.6	1.4	.8	.4
13	4.2	2.8	2.6	5	4.3	13	5	4.2	2.4	1.3	.8	.5
14	4.2	2.8	2.6	4.7	4.2	13	5	3.8	2.3	1.3	.8	.5
15	3.8	2.7	2.6	6	4.0	12	5	3.6	2.1	1.2	.8	.5
16	3.0	2.7	2.5	5.5	3.8	11	9	3.6	1.9	1.2	.8	.4
17	2.9	2.6	2.5	5	6.5	10	7	3.6	1.7	1.0	.8	.4
18	3.0	2.6	2.5	7	5.5	9.5	5.5	3.6	1.7	1.0	.7	.4
19	2.9	2.5	2.4	24	5.5	9.5	5.5	6.5	1.8	1.0	.8	.4
20	2.8	2.5	2.4	20	16	9.5	4.7	7	1.9	1.0	.8	.4
21	2.8	2.4	2.4	15	43	9.5	4.3	4.8	1.9	1.0	.8	.4
22	3.0	2.4	2.4	12	86	8.5	4.3	4.2	1.9	1.0	.8	.4
23	3.0	2.3	3.0	11	56	8	4.5	4.2	1.9	1.1	.8	.4
24	2.9	2.3	100	10	39	8	4.3	4.7	1.9	1.1	.8	.4
25	2.5	2.2	25	9	56	7.5	4.3	4.7	1.8	1.1	.8	.4
26	2.5	2.2	13	8.5	48	7	4.5	4.3	1.8	1.1	.8	.4
27	2.6	2.1	7.5	8	40	7	4.8	4.0	1.7	1.0	.8	.4
28	2.9	2.1	6.5	8	34	7	5.5	3.8	1.6	1.1	.6	.4
29	2.9	2.0	6	7.5	.....	7	5.5	3.8	1.6	1.1	.6	.4
30	2.8	2.0	5.5	6.5	.....	7	4.7	4.0	1.5	1.0	.6	.5
31	2.8	.....	5.5	6.5	.....	7	.....	4.0	.....	.9	.7	.....

NOTE.—No gage-height record Oct. 31 to Nov. 28; Dec. 7 to Jan. 12; Jan. 25–29; and Sept. 19–27. Discharge for these periods estimated from records of flow on nearby streams, except Sept. 19–27 which was interpolated.

1917–18.												
1	.6	.5	.8	.8	.8	6.4	11	4.3	2.8	1.5	.6	.4
2	.6	.5	.8	.8	.8	5.0	11	4.0	2.6	1.4	.6	.4
3	.5	.4	.8	.8	.8	4.5	11	4.0	2.5	1.2	.4	.4
4	.5	.5	.8	.8	.8	4.0	10	4.2	2.6	1.1	.4	.4
5	.5	.6	.8	.8	.8	4.8	9.4	4.5	2.6	1.0	.6	.4
6	.5	1.3	.8	.8	1.0	13	9.1	4.5	2.5	1.0	.6	.4
7	.5	1.0	.8	.8	1.1	114	8.8	4.3	2.4	.9	.6	.4
8	.5	.9	.8	.8	.8	58	8.1	4.3	2.3	.9	.7	.4
9	.5	.8	.8	.8	.8	30	7.8	4.3	2.3	.8	.8	.4
10	.5	.8	.7	.7	.8	62	7.8	4.2	2.1	.8	.8	.4
11	.6	.8	.7	.8	.8	154	7.5	4.0	2.3	.8	.8	.3
12	.8	.9	.7	.8	.9	122	7.5	3.8	2.1	.9	.8	.3
13	.9	.9	.7	1.0	.9	93	8.4	3.5	2.1	1.1	.8	.4
14	1.0	.8	.7	1.0	.9	62	7.2	3.3	1.9	1.2	.8	.8
15	1.0	.8	.7	1.0	.9	47	7.0	3.5	1.9	1.1	.8	.8
16	1.0	.8	.7	1.0	.9	37	6.7	2.6	1.7	.9	.7	.8
17	1.0	.7	.7	.9	1.4	30	6.1	3.6	1.7	.8	.7	.8
18	.7	.7	.6	.9	3.0	26	5.6	3.6	1.8	.6	.7	.7
19	.6	.6	.6	.8	1.8	32	5.0	3.5	1.9	.6	.7	.7
20	.5	.7	.6	.8	3.5	29	5.0	3.3	1.6	.6	.7	.6
21	.5	.7	.6	.8	26	25	4.8	3.3	1.5	.7	.6	.5
22	.5	.7	.7	.8	82	23	5.0	3.2	1.5	.7	.6	.6
23	.5	.8	.8	.8	24	21	5.3	3.2	1.8	.7	.6	.6
24	.5	.8	.8	.9	10	19	5.6	3.2	1.8	.8	.6	.6
25	.5	.8	.8	1.1	21	17	5.6	3.2	1.7	.8	.6	.5
26	.6	.8	.8	1.0	18	16	5.6	3.0	1.5	.8	.5	.5
27	.6	.8	.8	1.0	13	15	5.3	3.0	1.4	.8	.5	.9
28	.8	.8	.8	.9	8.4	14	5.3	3.2	1.4	.7	.5	.8
29	.8	.8	.8	.9	.....	13	5.3	3.3	1.4	.6	.5	.7
30	.6	.8	.8	.9	.....	11	4.8	3.0	1.4	.6	.5	.6
31	.6	.....	.8	.8	.....	11	.....	2.9	.....	.5	.5	.....

NOTE.—No gage-height record Aug. 14 to Sept. 2; discharge interpolated.

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Monthly discharge of Santa Anita Creek near Sierra Madre, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1916.					**1917–18.**				
August	2.5	1.7	2.11	130	October	1.0	0.5	0.64	39.4
September	3.1	1.6	1.75	104	November	1.3	.4	.76	45.2
					December	.8	.6	.75	46.1
The period				234	January	1.1	.7	.86	52.9
					February	82	.8	8.07	448
1916–17.					March	154	4.0	36.1	2,220
October	32	2.5	4.92	303	April	11	4.8	7.09	422
November	3.0	2.0	2.58	154	May	4.5	2.9	3.64	224
December	100	2.1	7.54	464	June	2.8	1.4	1.97	117
January	24	4.0	7.72	475	July	1.5	.5	.87	53.5
February	86	3.8	18.2	1,010	August	.8	.4	.63	38.7
March	29	7.0	12.7	781	September	.9	.3	.55	32.7
April	9	4.3	5.51	328					
May	7	3.6	4.31	265	The year	154	.3	5.16	3,740
June	3.6	1.5	2.32	138					
July	1.7	.9	1.24	76.2					
August	1.0	.6	.78	48.0					
September	.6	.4	.46	27.4					
The year	100	.4	5.62	4,070					

LITTLE SANTA ANITA CREEK NEAR SIERRA MADRE, CALIF.

LOCATION.—Near center of W. ½ sec. 9, T. 1 N., R. 11 W., about 2 miles northeast of Sierra Madre, Los Angeles County.

DRAINAGE AREA.—1.9 square miles (measured on topographic map).

ELEVATION.—About 2,100 feet above sea level.

RECORDS AVAILABLE.—April 15, 1916, to September 30, 1918.

GAGE.—Gurley graph water-stage recorder on left bank about 150 feet below Scherer's cabin.

DISCHARGE MEASUREMENTS.—Made from wooden bridge near gage or by wading.

CHANNEL AND CONTROL.—Gravel and boulders; permanent. One channel at all stages, straight for 75 feet above control. Right bank is rock cliff; left bank is stone wall 5 feet high which is probably above maximum stage. Control is low concrete dam, with triangular notch at left end, just below gage. Zero flow is at stage, 0.70 foot and top of dam at stage 1.50 feet. (See Pl. XIII, *C*, p. 422.)

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage recorded, 2.30 feet at 12.30 a. m. March 10, 1918 (discharge, 58 second-feet); minimum stage recorded, 0.86 foot at 7.30 p. m. September 12, 1918 (discharge, 0.03 second-foot).

DIVERSIONS.—None above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined. Mean daily gage height determined by inspection of recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

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Discharge measurements of Little Santa Anita Creek near Sierra Madre, Calif., for 1916–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec-ft.*
Apr. 15	H. J. Tompkins		2.0	Feb. 20	H. J. Tompkins	1.56	1.9
24	do		1.7	21	do	1.77	6.3
May 2	do		1.8	24	J. C. Dort	1.72	6.1
24	J. C. Dort		1.2	Oct. 24	H. J. Tompkins	1.02	.1
June 22	do		1.0	Dec. 22	E. Tompkins	1.05	.15
July 15	do		.6	1918.			
Oct. 10	do	1.35	1.0	Feb. 21	C. W. Sopp	1.72	5.0
23	H. J. Tompkins	1.25	.5	Mar. 11	H. J. Tompkins	1.97	18
Nov. 12	do	1.22	.4	28	C. W. Sopp	1.58	2.0
19	do	1.20	.5	Apr. 22	H. J. Tompkins	1.34	.86
26	do	1.20	.4	May 4	do	1.30	.58
Dec. 31	J. C. Dort	1.39	1.2	16	do	1.30	.65
1917.				July 1	C. W. Sopp	1.12	.20
Jan. 6	H. J. Tompkins	1.40	1.0	Aug. 2	H. J. Tompkins	1.06	.19
20	do	1.60	2.5	Sept. 23	do	1.02	.18
Feb. 10	do	1.32	.7				

Daily discharge, in second-feet, of Little Santa Anita Creek near Sierra Madre, Calif., for 1916–1918.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1916.			1916.			1916.		
1		0.25	11		0.25	21		0.2
2		.25	12		.2	22		.25
3		.25	13		.2	23		.3
4		.25	14		.2	24		.3
5		.3	15		.2	25		.3
6		.3	16		.2	26		.35
7		.3	17		.2	27		.3
8		.3	18		.2	28		.25
9		.25	19		.2	29		.25
10		.25	20		.2	30	0.25	1.0
						31	.25	

NOTE.—No gage-height record Sept. 9–17 and 29–30; discharge estimated.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	0.8	0.4	0.5	0.9	1.0	4.8	1.1	0.9	0.8	0.5	0.3	0.2
2	.8	.4	.7	.9	.9	4.3	1.0	.9	.8	.4	.2	.2
3	.8	.4	1.8	1.1	.9	3.4	1.0	.9	.7	.4	.2	.1
4	.8	.4	.7	1.1	.9	3.2	1.0	.8	.7	.4	.2	.1
5	.8	.5	.6	1.0	.9	3.0	1.0	.8	.7	.4	.2	.1
6	.8	.5	.6	1.0	.8	2.7	1.0	.8	.7	.4	.2	.1
7	.8	.5	.5	1.0	.8	2.5	1.0	.8	.7	.3	.2	.1
8	.8	.4	.5	.9	.8	2.5	1.0	.9	.6	.3	.2	.1
9	.8	.4	.5	.9	.8	2.5	1.2	.9	.6	.3	.2	.1
10	.8	.4	.5	.9	.8	2.2	1.0	.9	.6	.3	.2	.1
11	.8	.4	.4	.8	.8	2.2	1.0	.8	.7	.3	.2	.1
12	.8	.5	.4	.9	.7	2.2	.9	.8	.6	.3	.2	.1
13	.7	.4	.4	.8	.7	2.1	.9	.7	.6	.3	.2	.1
14	.7	.4	.4	.8	.7	1.9	.9	.7	.6	.3	.2	.1
15	.6	.4	.4	1.0	.7	1.9	1.0	.7	.6	.3	.2	.1
16	.6	.4	.4	1.0	.7	1.8	1.2	.7	.6	.3	.2	.1
17	.6	.4	.4	.9	1.2	1.7	1.0	.8	.6	.3	.2	.1
18	.6	.4	.4	1.1	.9	1.6	1.0	1.6	.6	.2	.2	.1
19	.6	.4	.4	2.7	1.0	1.6	.9	1.1	.5	.2	.2	.1
20	.6	.4	.4	2.5	1.8	1.5	.8	1.0	.5	.2	.2	.1
21	.6	.4	.4	2.3	7.5	1.4	.8	.9	.4	.2	.2	.1
22	.6	.4	.4	1.9	12	1.3	.8	.9	.4	.3	.2	.1
23	.6	.4	.4	1.7	8	1.3	.8	.9	.4	.3	.2	.1
24	.5	.4	1.4	1.6	5.5	1.3	.8	1.0	.5	.3	.2	.2
25	.5	.4	4.3	1.4	7.5	1.2	.8	.9	.5	.2	.2	.1
26	.5	.4	2.5	1.3	6.5	1.2	.8	.9	.5	.2	.2	.1
27	.5	.4	1.8	1.2	6	1.2	.9	.8	.5	.3	.2	.1
28	.5	.4	1.4	1.2	5	1.1	1.0	.8	.4	.2	.2	.1
29	.4	.4	1.5	1.2		1.1	1.0	.8	.4	.3	.2	.1
30	.4	.4	1.2	1.1		1.1	.9	.8	.5	.3	.2	.1
31	.4		1	1.0		1.1		.8		.3	.2	

NOTE.—Water-stage recorder not in operation Oct. 2–9, 17–22, 29; Mar. 29; June 17–22; July 15–20; and Sept. 29–30—discharge interpolated.

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Daily discharge, in second-feet, of Little Santa Anita Creek near Sierra Madre, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	0.1	0.1	0.2	0.1	0.1	1.0	1.9	0.8	0.6	0.2	0.2	0.05
2	.1	.1	.2	.1	.1	.9	1.9	.7	.6	.2	.1	.05
3	.1	.1	.2	.1	.1	.8	1.7	.7	.6	.2	.1	.05
4	.1	.1	.2	.1	.1	.8	1.6	.7	.6	.2	.1	.1
5	.1	.1	.2	.1	.1	.9	1.5	.8	.5	.2	.1	.1
6	.1	.2	.2	.1	.1	1.4	1.4	.8	.5	.2	.1	.05
7	.1	.2	.2	.1	.2	12	1.3	.8	.5	.2	.1	.05
8	.1	.2	.2	.1	.2	7	1.2	.8	.5	.2	.1	.05
9	.1	.2	.2	.1	.2	3.5	1.2	.8	.5	.2	.1	.05
10	.1	.2	.2	.1	.1	6	1.2	.8	.6	.2	.2	.05
11	.1	.2	.2	.2	.1	23	1.2	.8	.6	.2	.1	.04
12	.1	.2	.2	.2	.1	18	1.2	.7	.6	.2	.1	.04
13	.2	.2	.2	.2	.2	12	1.3	.7	.5	.3	.2	.1
14	.2	.2	.2	.2	.2	8	1.1	.7	.5	.3	.2	.2
15	.2	.2	.2	.2	.2	6	1.1	.7	.5	.3	.2	.2
16	.2	.1	.2	.2	.2	5.5	1.1	.7	.4	.2	.2	.2
17	.2	.1	.2	.2	.2	4.1	1.1	.7	.3	.2	.2	.2
18	.2	.1	.2	.2	.5	3.7	1.0	.7	.4	.2	.2	.1
19	.2	.1	.2	.2	.5	3.9	.9	.7	.4	.2	.2	.1
20	.1	.1	.2	.2	.5	3.3	.9	.7	.3	.2	.1	.1
21	.1	.1	.2	.1	4.7	2.9	.9	.7	.3	.2	.1	.1
22	.1	.1	.2	.2	12	2.7	.9	.7	.3	.2	.1	.1
23	.1	.1	.2	.2	2.7	2.5	.9	.6	.3	.2	.1	.1
24	.1	.1	.2	.2	1.9	2.3	.9	.7	.3	.2	.1	.1
25	.1	.2	.2	.2	2.0	2.1	.9	.7	.3	.2	.1	.1
26	.1	.2	.2	.2	1.9	2.0	.9	.7	.3	.2	.1	.1
27	.1	.2	.2	.2	1.6	2.0	.9	.7	.3	.2	.1	.2
28	.1	.2	.2	.2	1.2	2.1	.8	.8	.3	.2	.1	.1
29	.1	.2	.2	.2	.....	2.1	.8	.7	.2	.2	.1	.1
30	.1	.2	.1	.2	.....	2.0	.8	.7	.3	.2	.05	.1
31	.1	.....	.1	.2	.....	1.9	.....	.6	.....	.2	.05	.....

NOTE.—No gage-height record Oct. 1–6, 18–20, and Jan. 6–16—discharge interpolated.

Monthly discharge of Little Santa Anita Creek near Sierra Madre, Calif., for 1916–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1916.				
September	1.0	0.2	0.275	16
1916–17.				
October	.8	.4	.646	39.8
November	.5	.4	.423	25.6
December	14	.4	1.28	78.7
January	12.7	.8	1.23	75.6
February	12	.7	2.71	151
March	4.8	1.1	2.03	125
April	1.2	.8	.950	56.5
May	1.6	.7	.871	53.6
June	.8	.4	.577	34.3
July	.5	.2	.300	18.4
August	.3	.2	.203	12.5
September	.2	.1	.110	6.5
The year	14	.1	.92	676

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1917–18.				
October	0.2	0.1	0.123	7.6
November	.2	.1	.153	9.1
December	.2	.1	.194	11.9
January	.2	.1	.165	10.1
February	12	.1	1.14	63.3
March	23	.8	4.72	290
April	1.9	.8	1.15	68.4
May	.8	.6	.723	44.5
June	.6	.2	.430	25.6
July	.3	.2	.210	12.9
August	.2	.05	.126	7.7
September	.2	.04	.099	5.9
The year	23	.04	.770	557

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MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the drainage basin of Los Angeles River at points other than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous measurements in Los Angeles River drainage basin, Calif., for 1897–1917.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
June 24, 1898	Los Angeles River.	Pacific Ocean	Creek below Macy Street	a 0.5
Do	do	do	Zanja No. 7	5.59
Do	do	do	Diversion below Zanja No. 7	.64
Aug. 10, 1898	do	do	New bridge, Weir B	1.32
Do	do	do	San Fernando road crossing	4.84
Do	do	do	North Cahuenga road	9.74
Do	do	do	Old bridge, No. 4	14.4
Do	do	do	Tujunga Creek junction	.87
Aug. 15, 1898	do	do	Bridge No. 2, at Narrows	38.7
Do	do	do	Main supply ditch	16.4
Do	do	do	Total river at Crystal Springs	55.1
Jan. 5, 1899	do	do	The Narrows	67
Feb. 14, 1899	do	do	do	61
Feb. 25, 1899	do	do	do	67
Mar. 11, 1899	do	do	do	63
Mar. 25, 1899	do	do	do	61
Apr. 29, 1899	do	do	do	52
May 18, 1899	do	do	do	58
June 7, 1899	do	do	do	56
July 18, 1899	do	do	do	55
Aug. 19, 1899	do	do	do	57
Aug. 25, 1899	do	do	do	59
Sept. 20, 1899	do	do	do	53
Sept. 27, 1899	do	do	do	54
Oct. 25, 1899	do	do	do	57
Oct. 31, 1899	do	do	do	58
Nov. 17, 1899	do	do	do	59
Nov. 28, 1899	do	do	do	56
Dec. 13, 1899	do	do	do	58
Dec. 26, 1899	do	do	do	58
Sept. 20, 1901	do	do	Bridge No. 2	45.9
Mar. 25, 1903	do	do	Los Feliz Bridge	109
Apr. 8, 1903	do	do	do	37
Apr. 13, 1903	do	do	do	28
Apr. 17, 1903	do	do	do	64
Jan. 28, 1903	do	do	Alise Street Bridge	66
Apr. 11, 1903	do	do	Ninth Street Bridge	20
Apr. 18, 1903	do	do	do	106
Apr. 12, 1905	do	do	do	12.7
Apr. 18, 1903	do	do	Boyle Avenue	75
Do	do	do	Opposite Bell station	73
Apr. 20, 1903	do	do	Above junction of Rio Hondo	25
Do	do	do	Below junction of Rio Hondo	54
Do	do	do	½ mile above Compton and Clearwater road	82
Do	do	do	Opposite Clearwater	53
Apr. 21, 1903	do	do	½ mile above Cerritos road	39
Do	do	do	1½ miles below Cerritos road	77
Do	do	do	Opposite Seabright	78
Mar. 13, 1905	do	do	Fourth Street Bridge	4,520
Apr. 12, 1905	do	do	Huron Street	43
Mar. 13, 1906	do	do	Seventh Street Bridge, a. m.	850
Do	do	do	Seventh Street Bridge, p. m.	555
Mar. 16, 1906	do	do	do	75
Mar. 17, 1906	do	do	Seventh Street Bridge, a. m.	1,200
Do	do	do	Seventh Street Bridge, p. m.	420
Mar. 5, 1907	do	do	do	3,200
Jan. 28, 1901	Alise Creek	Los Angeles River.	Chatsworth road crossing	.6
Do	do	do	2 miles below road crossing	.32
Oct. 9, 1900	Pacoima Creek	do	Submerged dam	.09
Aug. 21, 1899	do	do	Mouth of canyon	b.0
Jan. 9, 1901	do	do	do	50
July 12, 1901	do	do	do	b.0
Sept. 20, 1901	do	do	do	b.0
Apr. 9, 1903	do	do	do	47
Apr. 18, 1903	do	do	do	98
May 5, 1903	do	do	do	24
June 5, 1903	do	do	do	8
Sept. 26, 1903	do	do	do	b.0
Apr. 12, 1905	do	do	do	30

a Approximate. b Stream dry.

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Miscellaneous measurements in Los Angeles River drainage basin, Calif., for 1897–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec. ft.
Apr. 9, 1903	Pacoima Creek	Los Angeles River.	Southern Pacific R. R.	32
Apr. 19, 1903	do	do	do	57
May 5, 1903	do	do	do	16
June 5, 1903	do	do	do	[b] .0
Apr. 12, 1905	do	do	do	17.6
May 5, 1903	do	do	1½ miles below Southern Pacific R. R.	[b] .0
Apr. 18, 1903	do	do	3 miles below Southern Pacific R. R.	[b] .0
Apr. 12, 1905	do	do	do	[b] .0
Feb. 13, 1917	Maclay	Diverts from Pacoima Creek.	Intake	3.5
Feb. 16, 1917	do	do	do	2.4
Aug. 21, 1899	Tujunga Creek	Los Angeles River.	Head works Monte Vista canal.	.44
Oct. 9, 1900	do	do	do	.19
Sept. 21, 1901	do	do	do	.22
Nov. 21, 1900	do	do	Southern Pacific R. R.	[a] 1,060
Nov. 22, 1900	do	do	do	19.2
Apr. 9, 1903	do	do	do	2
Apr. 17, 1903	do	do	do	124
May 5, 1903	do	do	do	0
June 4, 1903	do	do	do	0
Apr. 12, 1905	do	do	do	29
Nov. 22, 1900	do	do	3 miles below Southern Pacific R. R.	.05
Apr. 17, 1903	do	do	1½ miles below Southern Pacific R. R.	[b] .0
Apr. 12, 1905	do	do	2 miles below Southern Pacific R. R.	[b] .0
Apr. 10, 1903	do	do	Mouth of canyon	59
Apr. 17, 1903	do	do	do	157
May 5, 1903	do	do	do	37
June 4, 1903	do	do	do	12
Sept. 26, 1903	do	do	do	.1
Apr. 12, 1905	do	do	do	61
Aug. 2, 1917	Ditch	Diverts from Tujunga Creek.	Bryants Cold Spring	1.1
Dec. 1, 1917	do	do	Bryants Cold Spring, 6 feet above sand box.	2.0
Aug. 11, 1898	Little Tujunga Creek.	Tujunga, Wash.	do	.05
Aug. 21, 1899	do	do	do	[b] .0
July 12, 1901	do	do	do	[b] .0
Apr. 10, 1903	do	do	do	10
Apr. 17, 1903	do	do	do	27
May 5, 1903	do	do	do	4
June 4, 1903	do	do	do	1
Sept. 26, 1903	do	do	do	.0
Apr. 11, 1905	do	do	do	3.3
Mar. 31, 1916	do	do	Mouth of canyon	3.7
Apr. 6, 1916	do	do	do	4.4
Apr. 27, 1916	do	do	do	2
May 22, 1916	do	do	do	1.2
June 23, 1916	do	do	Mouth of canyon (estimated)	.2
Feb. 13, 1917	do	do	Mouth of canyon	2
Mar. 5, 1917	do	do	do	8.1
Apr. 11, 1917	do	do	do	1.6
Apr. 24, 1917	do	do	do	1.8
May 3, 1917	do	do	do	1.4
Jan. 15, 1901	Main Supply ditch plus Crystal Springs.		Above Bellevue reservoir diversion.	53.9
Apr. 24, 1901	do		do	51.4
June 4, 1901	do		do	46.4
Mar. 1, 1917	Cook Creek	Los Angeles River.	Just below junction of main forks near La Crescenta.	.2
Jan. 10, 1899	Arroyo Seco	do	Cable station, Terminal quarries.	3.02
Jan. 11, 1899	do	do	do	1.9
Jan. 12, 1899	do	do	do	2.0
Do	do	do	do	2.05
Feb. 1, 1899	do	do	do	.24
Mar. 17, 1899	do	do	do	3.24
Mar. 18, 1899	do	do	do	1.77
Mar. 19, 1899	do	do	do	.93
Mar. 20, 1899	do	do	do	2.52
Mar. 21, 1899	do	do	do	1.9

[a] Computed from flood marks. [b] Stream dry.

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Miscellaneous measurements in Los Angeles River drainage basin, Calif., for 1897–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Mar. 22, 1899	Arroyo Seco	Los Angeles River.	Cable station, Terminal quarries.	1.64
Mar. 23, 1899	do	do	do	1.56
Mar. 26, 1899	do	do	do	2.2
Mar. 28, 1899	do	do	do	1.22
Apr. 2, 1899	do	do	do	.28
Apr. 12, 1899	do	do	do	.08
Jan. 3, 1900	do	do	do	20.3
Jan. 4, 1900	do	do	do	4.3
Mar. 5, 1900	do	do	do	7.2
Mar. 6, 1900	do	do	do	1.2
May 5, 1900	do	do	do	42.4
May 6, 1900	do	do	do	10.5
May 7, 1900	do	do	do	5.4
May 14, 1900	do	do	do	2.2
Nov. 20, 1900	do	do	do	.23
Nov. 21, 1900, 11 a. m.	do	do	do	32
Nov. 21, 1900, 12 m.	do	do	do	35
Nov. 21, 1900, 1 p. m.	do	do	do	75
Nov. 21, 1900, 1.30 p. m.	do	do	do	81
Nov. 21, 1900, 2 p. m.	do	do	do	100
Nov. 21, 1900, 3 p. m.	do	do	do	144
Nov. 22, 1900, 11 a. m.	do	do	do	85
Nov. 22, 1900, 2 p. m.	do	do	do	99
Nov. 23, 1900	do	do	do	31
Nov. 24, 1900	do	do	do	11.5
Nov. 26, 1900	do	do	do	8.7
Dec. 1, 1900	do	do	do	4.3
Dec. 6, 1900	do	do	do	1.4
Jan. 6, 1901	do	do	do	7
Jan. 7, 1901, 9.30 a. m.	do	do	do	172
Jan. 7, 1901, 3.45 p. m.	do	do	do	103
Jan. 8, 1901	do	do	do	28
Jan. 11, 1901	do	do	do	14
Jan. 14, 1901	do	do	do	7
Jan. 20, 1901	do	do	do	5
Jan. 21, 1901	do	do	do	11
Jan. 23, 1901	do	do	do	7
Jan. 28, 1901	do	do	do	32
Jan. 29, 1901	do	do	do	11
Feb. 4, 1901	do	do	do	29
Feb. 5, 1901, 11 a. m.	do	do	do	869
Feb. 5, 1901, 3 p. m.	do	do	do	410
Feb. 6, 1901	do	do	do	200
Feb. 9, 1901	do	do	do	102
Feb. 11, 1901	do	do	do	102
Mar. 16, 1901	do	do	do	17
Apr. 29, 1901	do	do	do	1.6
May 10, 1901	do	do	do	5.3
July 12, 1897	do	do	Near Devils Gate[a]	5.12
Aug. 9, 1897	do	do	do	4.63
Oct. 11, 1897	do	do	do	4.13
Nov. 8, 1897	do	do	do	4.16
Sept. 16, 1898	do	do	do	3.6
Oct. 12, 1898	do	do	do	3.44
June 14, 1899	do	do	do	5.17
May 31, 1899	do	do	do	3.17
July 10, 1899	do	do	do	2.87
Sept. 17, 1899	do	do	do	3.55
Apr. 13, 1903	do	do	Devils Gate	17
May 21, 1903	do	do	do	2
Do	do	do	1 mile below Devils Gate	.0
Apr. 11, 1905	do	do	Devils Gate	12.5
Apr. 18, 1906	do	do	do	9.2
Sept. 16, 1898	do	do	Sheep corral, total	1.69
Oct. 24, 1898	do	do		1.48
May 29, 1899	do	do	Sheep corral, total	1.43
June 3, 1899	do	do	do	1.36
June 21, 1899	do	do	do	1.62
July 1, 1899	do	do	do	1.33
July 13, 1899	do	do	do	1.3
Sept. 19, 1899	do	do	do	1.94
Sept. 21, 1899	do	do	do	1.37
Apr. 13, 1903	do	do	do	4
Apr. 17, 1903	do	do	do	80
Feb. 6, 1901	do	do	Avenue 26 bridge	270
Jan. 28, 1903	do	do	do	274
Mar. 25, 1903	do	do	do	128
Apr. 17, 1903	do	do	do	77

[a] Devils Gate developments include Richardson and Wilson tunnels.

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Miscellaneous measurements in Los Angeles River drainage basin, Calif., for 1897–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Apr. 13, 1903	Arroyo Seco	Los Angeles River.	Mouth of canyon	24
Apr. 17, 1903	do	do	do	100
May 21, 1903	do	do	do	19
Apr. 11, 1905	do	do	do	17.1
Apr. 18, 1906	do	do	do	28
Apr. 17, 1907	do	do	do	49
May 14, 1907	do	do	do	18
Apr. 17, 1908	do	do	do	5
Sept. 16, 1898	do	do	Total flow into Osage Grove Avenue reservoir.	.6
Do	do	do	Marengo Improvement Co. reservoir.	1.47
Jan. 11, 1899	do	do	Loughery dam site	4.17
Apr. 13, 1903	do	do	Garvanza wagon bridge	*.6
Oct. 27, 1905	do	do	Sycamore grove, near Morgan's south line.	.1
Apr. 11, 1905	do	do	1,000 feet above submerged dam of Pasadena Land & Water Co.	2.65
Apr. 18, 1906	do	do	Submerged dam	*.6
July 14, 1908	do	do	1 mile above junction with Millard Canyon.	.2
Apr. 7, 1910	do	do	Mouth of Millard Canyon, 4 miles north of Pasadena.	7.7
June 6, 1910	do	do	In flume at intake of North Pasadena Land & Water Co. Total flow of stream.	2
June 28, 1910	do	do	do	1.2
Feb. 26, 1914	Millard Canyon Creek.	Arroyo Seco	Mouth	20
Mar. 12, 1914	do	do	do	4.7
May 4, 1914	do	do	do	1.9
Apr. 20, 1916	do	do	Above diversion near mouth.	1.6
May 4, 1916	do	do	do	.4
May 29, 1916	do	do	do	.1
Mar. 15, 1917	do	do	Mouth	1.9
Apr. 25, 1917	do	do	do	.21
May 29, 1917	do	do	do	.12
Aug. 27, 1917	do	do	do	*.0
Oct. 16, 1917	do	do	do	*.0
Nov. 3, 1917	do	do	do	*.0
July 3, 1898	Rio Hondo	Los Angeles River.	Old Mission Bridge	29.8
Aug. 8, 1900	do	do	do	22.3
July 15, 1902	do	do	do	23.8
Aug. 18, 1902	do	do	do	24.3
Sept. 8, 1902	do	do	do	25.6
Sept. 27, 1902	do	do	do	21.5
Oct. 11, 1902	do	do	do	24.7
Apr. 27, 1903	do	do	do	36
Oct. 2, 1903	do	do	do	20
June 15, 1904	do	do	do	22
July 8, 1904	do	do	do	24.1
Aug. 31, 1904	do	do	do	22.2
Sept. 24, 1904	do	do	do	22.7
Oct. 5, 1904	do	do	do	22
Oct. 15, 1904	do	do	do	27
Oct. 6, 1905	do	do	do	28
Apr. 20, 1903	do	do	Los Angeles & Salt Lake Ry. above Workman.	20
Apr. 27, 1903	do	do	Whittier road crossing	17
Do	do	do	Road crossing west of Rivera	12
Do	do	do	Southern Pacific R. R. west of Downey.	12
Nov. 14, 1898	Eaton Canyon Creek.	Rio Hondo		2.11
Jan. 11, 1899	do	do	Near falls	.5
Apr. 18, 1903	do	do	Mouth of canyon	29
May 21, 1903	do	do	do	3
Do			Water Co.'s diversion	2
Sept. 9, 1903	Eaton Canyon Creek.	do	Mouth of canyon	*.0
Apr. 18, 1903	do	do	Southern California Ry	*.0
May 21, 1903	do	do	1 mile above Southern California Ry.	*.0
May 20, 1916	do	do	Above upper dam	4.3
June 9, 1916	do	do	do	2.9
July 10, 1916	do	do	do	3.5
Aug. 22, 1916	do	do	do	1.4
Nov. 23, 1916	do	do	do	1.5

* Stream dry.

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Miscellaneous measurements in Los Angeles River drainage basin, Calif., for 1897–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Jan. 8, 1917	Eaton Canyon Creek.	Rio Hondo	Above upper dam	4.6
June 6, 1917	do	do	do	1.4
Aug. 27, 1917	do	do	do	.95
June 6, 1917	do	do	Above intake of Precipice Water Co.	1.5
Apr. 15, 1916	do	do	Above lower dam, about one-fourth mile above mouth of canyon.	7.2
Apr. 21, 1916	do	do	do	4.6
May 3, 1916	do	do	do	3.4
June 9, 1916	do	do	do	1.5
July 10, 1916	do	do	do	.4
Nov. 23, 1916	do	do	do	.9
Jan. 8, 1917	do	do	do	3.7
Oct. 24, 1917	do	do	do	[a] 0
June 6, 1917	do	do	500 feet below upper tunnel	2.3
Aug. 27, 1917	do	do	Mount Wilson toll bridge	[a] 0
Oct. 24, 1917	do	do	do	[a] 0
Do	do	do	Air to air tunnel	.05
Apr. 18, 1903	Santa Anita Creek.	do	Mouth of canyon	35
Oct. 23, 1906	do	do	do	1.5
Apr. 18, 1903	do	do	Southern Pacific Co.'s Monrovia branch.	[a] 0
May, 23, 1903	do	do	White Oak Avenue	[a] 0
Apr. 18, 1903	Little Santa Anita Creek.	Santa Anita Creek.	Near mouth	5

[a] Stream dry.

WATER ABSORBED IN SAND AND GRAVEL.

During the winter of 1902–3 the precipitation in southern California was greater than at any time during the preceding 10 years. This condition led to heavy irrigation during the spring of 1903, many irrigators taking advantage of it to thoroughly saturate the soil at a time when water was plenty and cheap, thereby saving much expense and contention which always accompanies a later irrigation when water is scarce and expensive and the demand is greater than the supply.

Immediately after the rain of April 16, 1903, a series of measurements were made by W. B. Clapp under the direction of the United States Geological Survey to determine the quantity of water being absorbed in the sand and gravel washes of the larger tributary streams of the three principal river basins of southern California—Santa Ana, San Gabriel, and Los Angeles rivers. Measurements were taken at the mouths of the canyons where the streams leave the mountains, at all canal diversions, and at such intervals along the streams as time and the available force detailed for this work would allow, the location of the point where the stream entirely disappears or left the valley being noted. These measurements show the quantity of water taken up in the sand and gravel wash of this stream on the days given, and the following tables give this quantity in second-feet and acre-feet for a period of 24 hours.

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Water discharged from tributary streams and sinking in the Los Angeles River basin above Burbank, Calif., for 1903.

Stream.	Second-feet.			Acre-feet.		
	Diversion.	Waste.	Total.	Diversion.	Waste.	Total.
Apr. 18						
Tujunga	.....	157	157	.....	311	311
Little Tujunga	.....	27	27	.....	54	54
Pacoima	.....	98	98	.....	194	194
	.....	282	282	.....	559	559
May 5.						
Tujunga	.....	37	37	.....	73	.....
Little Tujunga	.....	4	4	.....	8	.....
Pacoima	.....	24	24	.....	48	.....
	.....	65	65	.....	129	.....
June 4.						
Tujunga	3	9.3	12.3	6	18	24
Little Tujunga	.....	.7	.7	.....	1.4	1.4
Pacoima	3	5	8	6	10	16
	6	15	21	12	29.4	41.4

MALIBU CREEK BASIN.

GENERAL FEATURES.

Malibu Creek rises in the Santa Monica Mountains and enters the Pacific Ocean about 15 miles above the town of Santa Monica. This stream is formed by Triunfo and Las Virgenes creeks, which drain the northern portion of the Santa Monica Range and the lower foothill country to the north. The rocks throughout this basin are shale, sandstone, and conglomerate covered with good soil. A sparse growth of timber is formed at the higher elevations but the greater part of the area supports a growth of brush and grass that is used extensively for pasturage. Small areas of cultivated land are devoted to raising grain. A reservoir has been constructed on the upper reaches of Triunfo Creek and the waters are used for irrigation within the basin during the summer. When filled this reservoir covers an area of about 300 acres.

The mean precipitation in this basin amounts to about 25 inches annually and falls wholly in the form of rain.

GAGING-STATION RECORDS.

MALIBU CREEK NEAR CALABASAS, CALIF.

LOCATION.—Near center of sec. 12, T. 1 S., R. 18 W. (unsurveyed), at Chapman ranch, one-fourth mile below mouth of Las Virgenes Creek, and about 6½ miles southwest of Calabasas, Los Angeles County.

DRAINAGE AREA.—97 square miles.

ELEVATION.—About 550 feet above sea level.

RECORDS AVAILABLE.—January 1, 1903, to December 31, 1906.

GAGE.—Vertical staff fastened to an alder tree on right bank, one-fourth mile below mouth of Las Virgenes Creek.

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DISCHARGE MEASUREMENTS.—Made by floats or by wading.

CHANNEL AND CONTROL. Rock and gravel; not permanent. Both banks are high; channel straight for 600 feet above and curved for 300 feet below gage.

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. High-water measurements were made by floats. Rating curves were not well defined. Daily discharge ascertained by applying mean daily gage height to rating table, except for 1905–1906, for which it was determined by shifting-control method. Conditions unfavorable for accurate determinations. Records fair.

Discharge measurements of Malibu Creek near Calabasas, Calif., for 1903–1906.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-feet.*			*Feet.*	*Sec.-feet.*
1903.				1905.			
Mar. 6	W. B. Clapp	1.30	23	May 12	R. S. Hawley	0.82	8.5
25	J. G. Chapman	2.45	[a]292				
26	do	2.00	[a]100	1906.			
27	do	1.90	[a]72	Mar. 11	C. H. Lee	.85	1.0
31	do	3.40	[a]956	12	do	2.30	122
Apr. 1	do	3.25	[a]826	25	do	2.80	[a]406
July 26	W. B. Clapp	1.12	2.1	Apr. 18	do	1.30	19
				May 24	do	1.00	7.1
1905.							
Apr. 20	R. S. Hawley	.9	9.3				

[a] Float measurement.

Daily discharge, in second-feet, of Malibu Creek near Calabasas, Calif., for 1903–1905.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1903.							
1	2.5	18	10	817	10	8	4
2	2.5	18	10	362	10	8	4
3	2.5	16	10	179	10	8	4
4	2.5	16	28	128	10	8	4
5	2.5	16	30	72	10	8	4
6	2.5	16	28	72	10	8	4
7	2.5	16	20	72	10	5	4
8	2.5	16	18	33	10	5	4
9	2.5	16	16	33	10	5	4
10	2.5	16	16	24	10	5	4
11	2.5	16	16	24	10	5	2
12	3.5	16	14	24	10	5	2
13	3.5	16	14	24	10	5	2
14	3.5	16	14	20	10	5	2
15	3.5	16	14	16	10	5	2
16	3.5	16	14	785	10	5	2
17	4.5	16	14	415	10	5	2
18	4.5	16	14	146	10	5	2
19	4.5	16	12	95	10	5	2
20	4.5	16	12	57	10	5	2
21	3.5	16	10	50	10	5	2
22	3.5	16	10	44	10	5	2
23	3.5	16	10	33	8	5	2
24	3.5	16	17	24	8	5	2
25	4.5	16	265	16	8	5	2
26	4.5	16	86	16	8	5	2
27	7	10	75	13	8	4	2
28	113	10	34	10	8	4	2
29	27	.....	34	10	8	4	2
30	18	.....	34	10	8	4	2
31	12	.....	525	.....	8	.....	2

NOTE.—Record stopped for the summer July 31.

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Daily discharge, in second-feet, of Malibu Creek near Calabasas, Calif., for 1903–1905—Continued.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1903–4.									
1	2	2	5	5	5	5	4	1.5	1.5
2	2	2	5	5	5	5	4	1.5	1.5
3	2	2	5	5	5	5	4	1.5	.....
4	2	2	5	5	5	5	4	1.5	.....
5	2	2	5	5	5	2	4	1.5	.....
6	2	2	5	5	5	2	4	1.5	.....
7	2	2	5	5	5	2	4	1.5	.....
8	2	2	5	5	5	1.5	4	1.5	.....
9	2	4	5	5	5	1	4	1.5	.....
10	2	4	5	5	33	1	4	1.5	.....
11	2	4	5	5	20	1.5	2	1.5	.....
12	2	5	5	5	8	1.5	2	1.5	.....
13	2	5	5	5	4	1.5	2	1.5	.....
14	2	5	5	5	4	1.5	1.5	1.5	.....
15	2	5	5	5	4	1.5	1.5	1.5	.....
16	2	5	5	10	4	1.5	1.5	1.5	.....
17	2	5	5	8	4	1.5	1.5	1.5	.....
18	2	5	5	8	4	1.5	1.5	1.5	.....
19	2	5	5	5	4	4	1.5	1.5	.....
20	2	5	5	5	4	4	1.5	1.5	.....
21	2	5	5	5	4	4	1	1.5	.....
22	2	5	5	5	4	4	1	1.5	.....
23	2	5	5	5	24	4	1	1.5	.....
24	2	5	5	5	8	4	1	1.5	.....
25	2	5	5	5	5	4	1	1.5	.....
26	2	5	5	5	5	4	1	1.5	.....
27	2	5	5	8	5	4	1	1.5	.....
28	2	5	5	5	5	4	1.5	1.5	.....
29	2	5	5	5	5	4	1.5	1.5	.....
30	2	5	5	.....	5	4	1.5	1.5	.....
31	.....	5	5	.....	5	.....	1.5	.....	.....

NOTE.—Record stopped for the summer July 2.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1904–5.				1904–5.				1904–5.			
1	.....	1	4	11	.....	1	5	21	1	1	5
2	.....	1	4	12	.....	1	5	22	1	1	5
3	.....	1	5	13	.....	1	5	23	1	1	5
4	.....	1	5	14	.....	1	5	24	1	1	5
5	.....	1	5	15	1	1	5	25	1	1	5
6	.....	1	5	16	1	1	5	26	1	1	5
7	.....	1	5	17	1	1	5	27	1	2	5
8	.....	1	5	18	1	1	5	28	1	2	5
9	.....	1	5	19	1	1	5	29	1	2	5
10	.....	1	5	20	1	1	5	30	1	4	5
								31	1	.....	5

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Monthly discharge of Malibu Creek near Calabasas, Calif., for 1903–1906.

[Drainage area, 97 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1903.						
January	113	2.5	8.5	0.09	0.10	523
February	18	10	15.7	.16	.17	872
March	525	10	46.0	.47	.54	2,828
April	817	10	120.8	1.25	1.39	7,188
May	10	8	9.4	.10	.12	578
June	8	4	5.5	.06	.07	327
July	4	2	2.6	.03	.03	160
The period						12,500
1903–4.						
November	2	2	2.0	.02	.02	119
December	5	2	4.1	.04	.05	252
January	5	5	5.0	.05	.06	307
February	10	5	5.5	.06	.06	316
March	33	4	6.9	.07	.08	424
April	5	1	3.0	.03	.03	179
May	4	1	2.2	.02	.02	135
June	1.5	1.5	1.5	.02	.02	89
The period						1,820
1904–5.						
October 15–31	1	1	[a] 1.0	.01	.01	61
November	4	1	1.2	.01	.01	71
December	5	4	4.9	.05	.06	301
January	10	5	5.4	.056	.06	332
February	560	2	36.1	.372	.39	2,005
March	6,800	1	484	4.99	5.75	29,760
April	41	8	14.4	.148	.16	857
May	24	4	7.3	.075	.09	449
June	4	3	3.8	.039	.04	226
July	3	3	3	.031	.04	184
August	3	3	3	.031	.04	184
September	3	1	2.1	.022	.02	125
The period						34,600
1905–6.						
October	2	1	1.1	.011	.01	68
November	4	2	3.6	.037	.04	214
December	4	3	3.7	.038	.04	228
January	3	.8	1.3	.013	.01	80
February	12	.8	1.8	.019	.02	100
March	2,600	.9	223	2.30	2.65	13,700
April	62	9	22.1	.228	.25	1,320
May	15	7	9.1	.094	.11	560
June	7	7	7.1	.073	.08	422
July	7	4	4.8	.049	.06	295
August	4.4	4.4	4.4	.045	.05	271
September	4.4	2	3.6	.037	.04	214
The year	2,600	.8	23.0	.247	3.36	17,500
1906.						
October	4.4	4.4	4.4	.045	.05	271
November	4.4	4.4	4.4	.045	.05	262
December	275	2	19.8	.204	.24	1,220

[a] Taken as mean for month.

NOTE.—During 1905–6 discharge was determined by the indirect method for shifting control channels. Records are only approximate.

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TRIUNFO CREEK NEAR CALABASAS, CALIF.

LOCATION.—In NW. ¼ sec. 12, T. 1 S., R. 18 W. (unsurveyed), half a mile above junction with Las Virgenes Creek and 6½ miles southwest of Calabasas, Los Angeles County.

DRAINAGE AREA.—72 square miles.

ELEVATION.—About 550 feet above sea level.

RECORDS AVAILABLE.—January 1, 1903, to December 31, 1906.

GAGE.—Vertical staff bolted to rock cliff on right bank half a mile above junction with Las Virgenes Creek to form Malibu Creek.

DISCHARGE MEASUREMENTS.—Made by floats or by wading.

CHANNEL AND CONTROL.—Gravel and sand; shifting. Both banks are high and rocky; channel straight for 400 feet above and 800 feet below gage.

DIVERSION.—No information.

REGULATION.—No information.

ACCURACY—Stage-discharge relation not permanent. High-water measurements were made by floats. Rating curves were not well defined. Daily discharge ascertained by applying mean daily gage height to rating table, except for 1905–1906, for which it was determined by shifting-control method. Conditions unfavorable for accurate determinations. Records fair.

Discharge measurements of Triunfo Creek near Calabasas Calif., for 1903–1906.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1903.		*Feet.*	*Sec.-ft.*	1906.		*Feet.*	*Sec.-ft.*
Mar. 6	W. B. Clapp	1.15	23	Mar. 11	C. H. Lee	1.25	0.8
25	J. G. Chapman	1.75	155	11	do	1.38	1.8
26	do	1.15	[a] 40	12	do	2.25	98
27	do	1.05	[a] 13	25	do	2.95	459
31	do	2.75	[a] 1,075	25	do	2.79	313
Apr. 1	do	2.35	[a] 625	25	do	3.00	399
16	do	2.30	[a] 551	26	do	4.50	[a] 2,320
July 26	W. B. Clapp	.40	1.0	Apr. 18	do	2.00	19
1905.				May 24	do	2.05	6.1
Apr. 20	R. S. Hawley	1.60	8.0				
May 12	do	1.44	7.1				

[a] Measured by floats.

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Daily discharge, in second-feet, of Triunfo Creek near Calabasas, Calif., for 1903–4.

Day.	Jan.	Feb.	Mar.	Apr.	May	June	July
1903.							
1	1.5	8	8	504	9	4	2
2	1.5	12	8	90	9	4	2
3	2.0	12	8	35	9	4	2
4	2.0	12	28	26	9	4	2
5	2.0	12	22	19	9	4	2
6	2.0	12	16	16	9	4	2
7	2.0	12	16	14	9	4	2
8	2.0	12	16	12	9	4	2
9	2.0	12	16	12	9	4	2
10	2.0	12	12	9	9	4	2
11	2.0	12	12	8	9	4	2
12	1.5	12	12	8	9	4	2
13	1.5	12	12	8	8	4	2
14	1.5	12	12	8	8	4	2
15	1.5	12	12	8	8	4	2
16	1.5	12	12	411	8	4	2
17	2.0	12	12	250	8	4	2
18	2.0	12	12	74	8	4	2
19	2.0	12	12	60	8	4	2
20	2.0	12	12	46	6	3	2
21	1.5	12	8	35	6	3	2
22	1.5	12	8	30	6	3	2
23	1.5	12	8	26	6	3	2
24	2.0	12	16	19	6	3	2
25	2.0	12	102	14	6	3	2
26	2.0	12	19	14	6	3	2
27	3.0	8	12	12	6	2	2
28	23	8	12	9	6	2	2
29	12	.....	12	9	6	2	2
30	8	.....	12	9	4	2	2
31	8	.....	373	.....	4	.....	2

NOTE.—Record stopped for the summer July 31.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1903–4.							
1	0	1	3	3	3	3	2
2	0	1	3	3	3	2	2
3	0	1	3	3	3	2	2
4	0	1	3	3	3	2	2
5	0	0	3	5	3	2	2
6	0	1	3	4	3	2	2
7	0	1	3	4	3	2	2
8	0	1	3	3	2	1	2
9	0	1	3	3	2	.5	1
10	0	1	3	3	26	.5	1
11	0	1	3	3	14	.5	.5
12	0	2	3	3	4	.5	.....
13	0	2	3	3	3	.5	.....
14	0	2	3	3	3	1	.....
15	0	2	3	5	3	2	.....
16	0	2	3	8	3	2	.....
17	0	2	3	6	3	3	.....
18	0	2	3	6	3	3	.....
19	0	3	3	5	3	4	.....
20	0	3	3	4	3	2	.....
21	2	3	3	4	3	2	.....
22	2	3	3	4	3	2	.....
23	2	3	3	4	19	2	.....
24	2	3	3	4	6	2	.....
25	2	3	3	4	5	2	.....
26	2	3	3	4	4	2	.....
27	2	3	3	6	4	2	.....
28	1	3	3	4	4	2	.....
29	1	3	3	4	3	2	.....
30	1	3	3	.....	3	2	.....
31	.....	3	3	.....	3	.....	.....

NOTE.—Stream dry May 12 to Sept. 30.

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Monthly discharge of Triunfo Creek near Calabasas, Calif., for 1903–1906.

[Drainage area, 72 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1903.						
January	23	1.5	3.3	0.05	0.06	203
February	12	8	11.6	.16	.17	644
March	373	8	27.5	.39	.45	1,691
April	510	8	60.0	.83	.93	3,570
May	9	4	7.5	.10	.12	461
June	4	2	3.5	.05	.06	208
July	2	2	2.0	.03	.03	123
The period						6,900
1903–4.						
November	2	0	.6	.01	.01	36
December	3	0	2.0	.03	.03	123
January	3	3	3	.04	.05	184
February	8	3	4.1	.06	.06	236
March	26	2	4.8	.07	.08	295
April	4	.5	1.8	.02	.02	107
May	2	0	.6	.01	.01	37
The period						1,010
1905.						
January	0	0	.0	.0	.0	0
February	410	0	26.2	.364	.38	1,455
March	5,000	1	353.0	4.90	5.65	21,700
April	40	0	11.2	.156	.17	666
May	6	0	1.0	.014	.02	61
June	2	1	1.3	.018	.02	77
July	1	0	.97	.013	.02	60
August	0	0	.0	.0	.0	0
September	0	0	.0	.0	.0	0
The period						24,000
1905–6.						
October	0	0	.0	.0	.0	0
November	0	0	.0	.0	.0	0
December	0	0	.0	.0	.0	0
January	0.7	0	.2	.0028	.003	12
February	10	0	1.1	.015	.02	61
March	2,000	6	155	2.15	2.48	9,530
April	55	8	19.3	.268	.30	1,150
May	12	5	6.9	.096	.11	424
June	6	6	6.0	.083	.09	357
July	6	3	3.6	.050	.06	221
August	3	0	1.7	.024	.03	105
September	0	0	.0	.00	.00	0
The year	2,000	0	16.2	.225	3.09	11,860
1906.						
October	0	0	0	.0	.0	0
November	4	0	1.5	.021	.02	89
December	100	2	10.8	.150	.17	664

NOTE.—Discharge for 1905–6 determined by the indirect method for shifting control.

SANTA CLARA RIVER BASIN.

GENERAL FEATURES.

Santa Clara River rises in Soledad Canyon, in the northwest end of the Sierra Madre, in Los Angeles County, Calif., and flows westward through what are known locally as the Piru, Sespe, and Santa Clara valleys. The stream is augmented by five tributaries, which enter it from the north—the San Francisquito, the Castac, the Piru, the

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Sespe, and the Ojai. The river passes through Ventura County and empties into the Pacific Ocean about 3 miles south of Ventura.

For the lower 40 miles of its course the channel of Santa Clara River is broad and sandy. A remarkable feature is the small run-off from this large drainage basin. The flood stages of the stream occur almost wholly in the winter, and at most points on the drainage line the channel is dry during the summer.

The valley through which the river flows is of a high order agriculturally, and its products include all the citrus fruits common to California.

GAGING-STATION RECORDS.

SANTA CLARA RIVER AT FILLMORE, CALIF.

LOCATION.—In NW. ¼ sec. 31, T. 4 N., R. 19 W., at highway bridge 1½ miles above mouth of Sespe Creek and half a mile southwest of Fillmore, Ventura County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 400 feet above sea level.

RECORDS AVAILABLE.—August 31, 1911, to September 30, 1912.

GAGE.—Vertical staff fastened to piling near right end of bridge.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Shifting sand.

DIVERSIONS.—Water is diverted for irrigation from main river and tributaries above the station.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. Rating curves only fairly well defined. Daily discharge ascertained by applying mean daily gage heights to rating tables covering short periods or by shifting-control method. Records fair.

Discharge measurements of Santa Clara River at Fillmore, Calif., for 1911–12.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*	1912.		*Feet.*	*Sec.-ft.*
Oct. 25	F. C. Ebert	2.40	23	Mar. 16	F. C. Ebert	2.57	91
25	Lasley Lee	2.40	23	25	do	2.81	64
				Apr. 25	do	3.32	40
1912.				May 13	do	3.24	34
Jan. 8	F. C. Ebert	2.23	27	June 26	do	2.96	18
26	do	2.22	26	Aug. 7	do	2.70	16
Feb. 4	do	2.14	20	19	do	2.30	6.5
29	do	2.07	14	Sept. 6	do	2.50	14

NOTE.—All measurements made by wading.

Daily discharge, in second-feet, of Santa Clara River at Fillmore, Calif., for 1911–12.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1911.			1911.			1911.		
1		36	11		39	21		41
2		36	12		39	22		36
3		41	13		39	23		43
4		43	14		39	24		43
5		36	15		39	25		43
6		36	16		41	26		43
7		36	17		38	27		43
8		39	18		36	28		43
9		34	19		41	29		43
10		39	20		45	30		43
						31	36	

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Daily discharge, in second-feet, of Santa Clara River at Fillmore, Calif., for 1911–12—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	43	26	31	29	29	25	55	34	42	20	24	14
2	45	26	31	29	29	25	53	31	42	20	25	14
3	45	26	31	29	29	25	51	34	38	21	25	14
4	45	26	31	29	21	86	42	34	38	21	25	14
5	39	26	31	29	21	112	147	34	38	21	25	14
6	39	26	31	29	25	182	143	34	38	21	17	14
7	45	27	31	29	25	70	138	42	42	21	16	15
8	45	27	31	29	25	131	135	46	42	21	15	17
9	45	27	31	29	21	245	68	46	42	22	14	18
10	51	27	31	29	21	148	66	46	42	22	14	18
11	47	27	25	29	21	50	64	38	38	22	3	19
12	41	27	25	29	21	132	62	34	38	22	12	20
13	41	28	25	29	21	52	38	34	38	22	11	20
14	51	28	25	29	21	95	36	34	42	22	10	21
15	41	28	25	29	21	93	33	34	42	23	9.7	22
16	41	28	25	29	21	93	52	34	42	23	8.9	22
17	41	28	25	29	21	109	50	34	38	24	8.1	22
18	49	28	25	29	21	103	48	34	38	24	7.3	24
19	49	29	25	29	21	85	78	28	38	24	6.5	25
20	43	29	25	29	21	80	95	28	42	24	6.5	25
21	43	29	26	29	21	75	92	38	42	25	12	25
22	43	29	26	29	21	78	80	38	42	25	12	25
23	49	29	26	29	21	72	31	38	42	25	12	27
24	24	29	26	29	21	68	31	38	38	25	12	27
25	24	30	26	25	21	63	31	38	38	25	12	29
26	25	30	26	25	21	33	31	38	18	25	12	30
27	25	30	26	25	21	32	31	38	18	26	12	31
28	25	30	26	25	21	30	31	38	18	24	12	21
29	25	30	26	25	21	53	31	38	18	24	14	32
30	25	30	26	25	.....	22	34	38	13	24	14	32
31	25	.....	26	29	.....	50	.....	42	.....	24	14	.....

NOTE.—Daily discharge determined from fairly well defined rating curves and by the indirect method for shifting-control channels. Interpolated between measurements Aug. 8–20, 1912.

Monthly discharge of Santa Clara River at Fillmore, Calif., for 1911–12.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1911.					1912—contd.				
September	45	34	39.7	2,360	April	147	31	62.6	3,720
October	51	24	39.3	2,420	May	46	28	36.6	2,250
November	30	26	28.0	1,670	June	42	13	36.2	2,150
December	31	25	27.3	1,680	July	26	20	23.0	1,410
1912.					August	25	6.5	13.9	855
January	29	25	28.2	1,730	September	32	14	22.1	1,320
February	29	21	22.2	1,280	The year	245	6.5	35.1	25,500
March	245	22	81.2	4,990					

PIRU CREEK NEAR PIRU, CALIF.

LOCATION.—In southern part of Temescal grant, below suspension footbridge in Santa Barbara National Forest, 1¼ miles below Holser Canyon, 2 miles above junction with Santa Clara River, and 1¾ miles northeast of Piru, Ventura County.

DRAINAGE AREA.—432 square miles (measured on topographic maps).

ELEVATION.—About 700 feet above sea level.

RECORDS AVAILABLE.—October 28, 1911, to September 5, 1913. (Discharge measurements only, October 28, 1911, to February 29, 1912.)

GAGE.—Vertical staff in two sections fastened to cottonwood tree on right bank, about 300 feet below bridge.

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DISCHARGE MEASUREMENTS.—Made from railroad bridge 1 mile below gage or by wading.

CHANNEL AND CONTROL.—Gravel and sand; shifting.

DIVERSIONS.—Water is diverted above the station through a 4-inch pipe for municipal supply at Piru.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. Rating curves only fairly well defined. Daily discharge ascertained by applying mean daily gage height to rating tables covering short periods or by shifting-control method. Records fair.

Discharge measurements of Piru Creek near Piru, Calif., for 1911–1913.

[Made by F. C. Ebert.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1911.	*Feet.*	*Sec.-ft.*	1912.	*Feet.*	*Sec.-ft.*	1913.	*Feet.*	*Sec.-ft.*
Oct. 28	2.57	30	Aug. 19	2.88	9.3	Mar. 6	3.90	271
1912.			Sept. 6	2.88	7.5	9	4.00	281
Jan. 8	2.93	31	Oct. 11	2.88	9.7	31	3.55	140
25	2.92	30	Nov. 7	2.93	15	Apr. 2	3.66	158
Feb. 4	2.89	25	Dec. 4	2.74	16	28	3.76	55
29	2.95	27	1913.			30	3.22	51
Mar. 16	3.60	160	Jan. 6	2.71	11	May 21	2.82	24
25	3.36	111	8	2.72	13	23	2.80	25
May 12	3.49	80	29	4.23	28	June 5	3.03	48
16	3.30	64	31	4.22	25	24	2.62	17
June 26	2.90	18	Feb. 12	3.98	55	26	2.63	20
Aug. 7	2.85	7.6	27	4.05	483	Aug. 13	2.40	5.6
						17	2.43	7.4

NOTE.—1911–12: All made by wading.

Daily discharge, in second-feet, of Piru Creek near Piru, Calif., for 1912–13.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912.							
1	37	114	72	48	17	10	8.0
2	37	114	66	48	17	9	7.9
3	37	114	66	48	17	9	7.8
4	137	114	66	48	17	9	7.7
5	137	114	60	42	16	9	7.6
6	310	114	60	42	16	8	7.5
7	170	122	124	37	16	7.6	7.5
8	123	130	124	37	16	7.8	7.6
9	130	137	115	37	15	8.0	7.6
10	188	216	108	37	15	8.1	7.7
11	162	132	100	37	15	8.2	7.7
12	198	115	92	32	15	8.3	7.8
13	153	115	78	32	14	8.4	7.8
14	145	100	72	32	14	8.5	7.9
15	137	100	66	32	14	8.6	8.0
16	137	100	60	32	14	8.7	8.1
17	137	100	60	32	13	8.9	8.1
18	145	100	60	32	13	9.1	8.2
19	145	100	60	32	13	9.3	8.2
20	153	100	60	27	13	9.2	8.3
21	153	85	60	27	12	9.1	8.3
22	145	72	60	27	12	9.0	8.4
23	145	78	60	27	12	8.9	8.5
24	130	78	54	27	12	8.8	8.6
25	122	78	48	27	11	8.7	8.6
26	122	78	48	27	11	8.6	8.7
27	114	78	48	18	11	8.5	8.7
28	122	72	48	18	11	8.4	8.8
29	122	72	48	18	10	8.3	8.8
30	122	72	48	18	10	8.2	8.9
31	114	.....	48	.....	10	8.1	.....

NOTE.—Daily discharge determined from fairly well defined rating curves applicable as follows: Feb. 1 to Mar. 6; Mar. 7 to Apr. 10; and Apr. 11 to June 25. Shifting-control method from June 26 to Sept. 30.

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Daily discharge, in second-feet, of Piru Creek near Piru, Calif., for 1912–13—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912-13.												
1	11	15	20	13	30	420	157	48	20	14	7	37
2	15	15	16	13	30	390	157	44	27	14	7	28
3	15	15	16	13	35	360	154	43	29	12	7	19
4	30	15	16	11	40	330	150	41	60	11	7	13
5	15	15	16	11	45	300	146	40	67	11	7	7
6	15	15	16	11	85	271	142	38	91	14	9	.....
7	10	15	16	13	200	270	138	37	148	11	7	.....
8	10	15	16	13	200	280	134	34	51	11	7	.....
9	10	15	16	16	255	281	130	34	37	11	7	.....
10	10	25	16	16	225	274	126	33	33	11	7	.....
11	10	25	16	16	165	268	122	31	29	11	7	.....
12	10	25	16	16	55	262	118	29	29	11	7	.....
13	10	25	16	16	55	256	114	29	26	11	7	.....
14	10	25	16	16	45	250	110	28	22	11	7	.....
15	10	25	16	250	45	244	106	28	22	11	7	.....
16	10	25	16	220	40	238	102	26	22	11	7	.....
17	10	25	16	250	35	232	98	26	22	11	9	.....
18	10	25	16	215	35	226	94	26	19	11	7	.....
19	10	25	16	190	30	220	90	25	16	11	7	.....
20	10	25	16	155	25	214	86	25	16	11	7	.....
21	10	25	16	125	25	208	82	24	16	11	7	.....
22	10	25	16	110	20	202	78	24	16	9	7	.....
23	10	25	16	85	50	196	74	25	16	11	7	.....
24	10	20	16	60	1,250	190	70	25	16	11	7	.....
25	10	20	16	50	1,100	184	66	23	16	11	7	.....
26	10	20	16	42	650	178	62	22	16	11	7	.....
27	15	20	16	35	463	172	58	22	22	11	165	.....
28	15	20	16	32	450	166	55	21	29	11	130	.....
29	15	20	16	28	.....	160	53	20	22	11	101	.....
30	15	20	16	26	.....	154	51	20	19	11	82	.....
31	15	.....	16	25	.....	148	.....	20	.....	9	59	.....

NOTE.—Daily discharge Oct. 1, 1912, to June 4, 1913, determined by interpolation between discharge measurements and study of observer's weather notes and by shifting-control method; accuracy only approximate. Discharge June 5 to Sept. 30, 1913, determined from a rating curve well defined below 100 second-feet.

Monthly discharge of Piru Creek near Piru, Calif., for 1912–13.

[Drainage area, 432 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1912.						
January	.....	.....	a 30	0.069	0.08	1,840
February	.....	.....	a 26	.060	.06	1,500
March	310	37	136	.315	.36	8,360
April	216	72	104	.241	.27	6,190
May	124	48	69.0	.160	.18	4,240
June	48	18	32.6	.075	.08	1,940
July	17	10	13.6	.031	.04	836
August	10	7.6	8.62	.020	.02	530
September	8.9	7.5	8.11	.019	.02	483
The period	.....	.....	.....	.....	.....	25,960
1912-13.						
October	.....	.....	12.1	.....	.....	744
November	.....	.....	20.8	.....	.....	1,240
December	.....	.....	16.1	.....	.....	990
January	250	11	67.5	.....	.....	4,150
February	1,250	20	296	.....	.....	11,400
March	420	148	243	.....	.....	14,900
April	157	51	104	.....	.....	6,190
May	48	20	29.4	.....	.....	1,810
June	148	16	32.5	.....	.....	1,930
July	14	9	11.2	.....	.....	689
August	165	7	23.4	.....	.....	1,440
September 1–5	37	7	20.8	.....	.....	205
The period	.....	.....	.....	.....	.....	45,700

a Estimated.

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SESPE CREEK NEAR SESPE, CALIF.

LOCATION.—At Bradfields Camp, in Santa Barbara National Forest, three-fourths mile below mouth of West Fork of Sespe Creek, 4½ miles above intake of Fillmore canal, and 6½ miles northwest of Sespe, Ventura County.

DRAINAGE AREA.—216 square miles (measured by Ralph Bennett, consulting engineer).

ELEVATION.—About 1,400 feet above sea level.

RECORDS AVAILABLE.—October 1, 1915, to August 3, 1918.

GAGE.—Painted on large boulder and on rock cliff on left bank.

DISCHARGE MEASUREMENTS.—Made from cable 250 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders; fairly permanent.

EXTREMES OF DISCHARGE.—1915–1918: Maximum stage recorded, 18.7 feet January 17, 1916 (discharge, 18,600 second-feet); minimum stage, 4.33 feet during September and October, 1917 (discharge, 3.6 second-feet).

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. The flood in January, 1916, caused a slight scour in channel. Several fairly well-defined rating curves have been used. Gage read to hundredths; number of readings a day not known. Daily discharge ascertained by applying gage height, as reported, to rating table. Records good, except March 8 to August 3, 1918, which are only fair on account of changes in control.

COOPERATION.—Gage-height record and nearly all discharge measurements furnished by Sespe Light & Power Co.

Discharge measurements of Sespe Creek near Sespe, Calif., for 1915-1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec-ft.*			*Feet.*	*Sec.-ft.*
1915.				1917.			
Sept. 7	G. H. Killgore		10	Apr. 15	J. F. Waggoner	5.32	60
9	do		15	21	do	5.21	60
Nov. 3	do	5.06	20	28	do	5.20	62
Dec. 4	do	5.62	65	May 5	do	5.10	48
1916.				12	do	4.98	36
Jan. 2	G. H. Killgore	7.60	508	19	do	4.96	31
3	do	6.70	292	26	do	4.94	31
4	do	8.90	1,320	June 24	do	4.58	10
17	do	15.90	10,100	30	do	4.56	8.9
17	do	18.70	17,400	July 1	do	4.53	8.6
18	do	16.90	13,700	15	do	4.48	7.0
19	do	9.20	1,550	28	do	4.43	4.3
21	do	7.60	678	Aug. 5	do	4.41	4.6
27	do	12.90	4,660	11	do	4.38	3.9
Mar. 10	do	6.25	218	19	do	4.39	4.4
Apr. 4	do	5.64	106	26	do	4.37	4.4
20	do	5.34	66	Sept. 1	do	4.36	4.5
May 31	do	4.99	42	8	do	4.33	3.7
June 20	do	4.85	23	15	do	4.35	3.5
July 15	do	4.80	20	22	do	4.34	3.8
Sept. 14	F. C. Ebert	4.72	9.7	29	do	4.34	3.7
29	J. F. Waggoner	4.74	8.4	Oct. 7	do	4.34	3.9
Oct. 15	do	4.98	36	14	do	4.36	4.3
Nov. 5	do	4.86	23	1918.			
Dec. 10	do	4.86	24	Feb. 2	J. F. Russell	4.44	9.4
1917.				10	do	4.47	8.4
Jan. 6	J. F. Waggoner	5.59	131	15	do	4.48	7.5
28	do	5.80	110	Mar. 1	do	7.20	421
Feb. 5	F. C. Ebert	5.49	86	9	do	8.20	623
12	J. F. Waggoner	5.38	68	16	do	8.40	475
21	do	7.25	416	24	do	8.50	433
21	do	7.25	424	30	do	7.60	303
22	do	9.45	991	Apr. 6	do	6.30	185
22	do	9.45	995	June 16	do	5.10	57
24	do	12.00	3,970	23	do	4.85	54
Mar. 7	do	6.08	133	30	do	4.75	52
13	do	5.80	108	July 7	do	4.75	53
27	do	5.47	87	14	do	4.70	51
				Aug. 2	F. C. Ebert	4.60	17

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Daily discharge, in second-feet, of Sespe Creek near Sespe, Calif., for 1915–1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	18	18	18	46	495	275	107	50	33	20	18	16
2	18	18	18	605	442	262	106	49	33	20	18	16
3	18	18	19	560	390	250	106	48	32	20	18	16
4	18	18	111	960	360	238	106	47	31	20	18	16
5	18	19	32	184	330	390	101	46	30	23	16	16
6	18	19	27	144	315	275	96	45	29	23	16	16
7	18	19	25	110	288	250	92	44	28	21	16	16
8	18	19	23	106	288	238	87	44	28	21	16	17
9	18	19	23	850	275	225	86	44	28	21	16	17
10	18	19	23	440	262	215	86	42	26	21	16	16
11	18	19	22	205	250	205	85	41	26	21	16	16
12	18	19	22	144	250	195	116	40	25	21	16	16
13	18	19	22	119	238	185	89	40	24	21	17	16
14	18	19	32	480	225	165	84	39	24	21	17	16
15	18	19	26	228	215	165	81	39	24	20	18	16
16	18	19	24	253	205	161	76	38	24	20	18	16
17	18	19	24	8,100	195	156	75	38	23	20	18	16
18	18	19	24	11,400	185	152	74	37	23	20	18	16
19	18	19	23	2,320	185	147	70	37	23	20	16	16
20	18	20	21	1,060	175	250	67	37	24	20	17	16
21	18	20	20	615	185	195	65	36	24	19	17	16
22	18	20	20	495	165	175	64	35	26	19	18	16
23	18	19	20	390	156	161	60	34	26	18	18	16
24	18	19	20	375	147	154	60	33	26	18	16	16
25	18	18	20	360	156	147	59	34	24	18	17	16
26	18	18	20	345	205	138	56	35	23	18	18	16
27	18	18	20	6,500	1,180	132	55	34	22	18	16	16
28	18	18	20	1,360	460	125	53	33	22	18	16	16
29	18	18	20	900	300	119	52	35	21	18	16	17
30	18	18	21	705	.....	113	51	34	21	18	16	27
31	18	.....	23	595	.....	110	.....	33	.....	18	16	.....

NOTE.—No gage-height record Apr. 30 to May 6; discharge interpolated.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	26	21	22	65	96	240	86	47	25	8.5	5.5	4.2
2	122	21	24	64	94	228	81	41	24	8	5.5	4.0
3	27	24	38	86	94	205	81	39	23	8	5.5	4.0
4	35	24	36	99	90	174	80	37	21	8	5.5	4.0
5	26	23	34	94	85	163	80	42	21	8	5	4.0
6	52	23	26	99	82	154	79	33	20	8	5	4.0
7	58	24	25	87	86	144	78	33	20	8	5	3.6
8	36	24	24	79	81	127	78	33	19	8	5	3.6
9	35	23	24	68	80	127	76	34	18	7.5	5	3.6
10	34	21	24	74	76	127	75	34	17	7	4.8	3.6
11	47	23	24	75	73	111	71	34	16	7	4.6	3.6
12	40	23	24	86	72	96	67	33	16	7.5	4.8	4.0
13	34	22	24	330	71	91	65	29	15	7	4.8	4.0
14	33	22	24	315	70	90	67	29	14	7	4.8	4.0
15	27	23	24	315	68	90	65	30	14	6.5	4.8	4.0
16	26	22	24	100	68	89	67	30	12	6	4.8	3.8
17	25	22	24	156	74	88	68	30	10	6	4.8	3.8
18	25	22	24	158	68	88	65	33	10	6	4.8	3.8
19	24	22	24	163	72	87	61	31	9.5	6	4.8	3.6
20	24	23	24	425	300	86	56	30	9.5	6	4.8	3.6
21	24	22	24	300	420	86	53	29	9.5	6	4.6	3.6
22	23	22	24	161	903	85	52	28	9.5	6	4.4	3.8
23	24	23	24	117	440	84	53	28	9.5	6	4.4	3.8
24	23	23	478	107	3,830	84	52	29	9.5	5.5	4.4	3.8
25	22	22	1,360	103	695	83	52	30	9	5.5	4.4	3.6
26	22	23	425	106	370	82	52	30	9	5.5	4.4	3.8
27	21	22	101	142	240	82	52	28	9	5.5	4.4	3.8
28	20	23	86	135	228	82	52	28	8.5	5.5	4.2	3.8
29	20	24	75	132	.....	86	50	28	8.5	5.5	4.2	3.8
30	21	23	63	122	.....	90	48	28	9	5	4.2	3.8
31	20	.....	63	108	.....	90	.....	26	.....	5	4.2	.....

NOTE.—Discharge interpolated Mar. 14–26 and Sept. 30.

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Daily discharge, in second-feet, of Sespe Creek near Sespe, Calif., for 1915–1918—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	3.8	.....	.....	.....	6	440	269	111	74	52	17	.....
2	3.8	.....	.....	.....	6	440	252	111	74	52	17	.....
3	3.8	.....	.....	.....	6	405	235	104	71	52	17	.....
4	3.6	.....	.....	.....	6	370	218	97	71	53	.....	.....
5	3.6	.....	.....	.....	6	405	201	100	68	53	.....	.....
6	3.6	.....	.....	.....	5.5	1,800	185	97	68	53	.....	.....
7	3.8	.....	.....	.....	6	6,350	195	94	66	53	.....	.....
8	3.8	.....	.....	.....	6	1,370	193	94	64	53	.....	.....
9	4.0	.....	.....	.....	6	623	192	97	64	53	.....	.....
10	4.0	.....	.....	.....	6.5	6,350	190	90	61	52	.....	.....
11	4.2	.....	.....	.....	6.5	1,940	191	83	61	52	.....	.....
12	4.2	.....	.....	.....	6	4,130	175	83	57	51	.....	.....
13	4.2	.....	.....	.....	6	1,700	165	77	57	51	.....	.....
14	4.2	.....	.....	.....	6	1,070	159	77	57	51	.....	.....
15	.....	.....	.....	.....	6.5	600	155	80	53	51	.....	.....
16	.....	.....	.....	.....	7	475	153	80	57	49	.....	.....
17	.....	.....	.....	.....	7	365	149	77	56	47	.....	.....
18	.....	.....	.....	.....	25	335	145	74	56	45	.....	.....
19	.....	.....	.....	.....	15	3,220	135	71	55	43	.....	.....
20	.....	.....	.....	.....	615	1,450	127	71	55	41	.....	.....
21	.....	.....	.....	.....	2,320	690	127	74	54	39	.....	.....
22	.....	.....	.....	.....	7,500	645	119	77	54	37	.....	.....
23	.....	.....	.....	.....	905	515	111	77	54	35	.....	.....
24	.....	.....	.....	.....	370	433	111	74	54	33	.....	.....
25	.....	.....	.....	6	1,800	410	104	71	53	31	.....	.....
26	.....	.....	.....	6	1,020	385	97	74	53	29	.....	.....
27	.....	.....	.....	5.5	628	360	97	74	53	27	.....	.....
28	.....	.....	.....	5.5	480	340	90	71	52	25	.....	.....
29	.....	.....	.....	5.5	.....	320	94	71	52	23	.....	.....
30	.....	.....	.....	6	.....	303	100	74	52	21	.....	.....
31	.....	.....	.....	6	.....	286	.....	71	.....	19	.....	.....

NOTE.—No gage-height record Oct. 15 to Jan. 24. Discharge interpolated Mar. 24 to Apr. 5 and June 16 to Aug. 3.

Monthly discharge of Sespe Creek near Sespe, Calif., for 1915–1918.

[Drainage area, 216 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1915–16.						
October	18	18	18	0.083	0.10	1,110
November	20	18	18.8	.087	.10	1,120
December	111	18	25.3	.117	.13	1,560
January	11,400	46	1,320	6.11	7.04	81,200
February	1,180	147	294	1.36	1.47	16,900
March	390	110	193	.894	1.03	11,900
April	116	51	78.8	.365	.41	4,690
May	50	33	39.4	.182	.21	2,420
June	33	21	25.8	.119	.13	1,540
July	23	18	19.8	.092	.11	1,220
August	18	16	16.9	.078	.09	1,040
September	27	16	16.5	.076	.08	982
The year	11,400	16	173	.801	10.90	126,000
1916–17.						
October	122	20	32.1	0.149	0.17	1,970
November	24	21	22.6	.105	.12	1,340
December	1,360	22	105	.486	.56	6,460
January	425	64	144	.667	.77	8,850
February	3,830	68	319	1.48	1.54	17,700
March	240	82	114	.528	.61	7,010
April	86	48	65.4	.303	.34	3,890
May	47	26	32.1	.149	.17	1,970
June	25	8.5	14.2	.066	.07	845
July	8.5	5	6.61	.031	.04	406
August	5.5	4.2	4.75	.022	.03	292
September	4.2	3.6	3.81	.018	.02	227
The year	3,830	3.6	70.4	.326	4.44	51,000

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Monthly discharge of Sespe Creek near Sespe, Calif., for 1915–1918—Continued.

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
1917–18.						
October 1–14	4.2	3.6	3.90	0.048	0.01	108
January 25–31	6	5.5	5.79	.027	.01	80.4
February	7,500	5.5	564	2.61	2.72	31,300
March	6,350	286	1,246	5.74	6.62	76,200
April	269	90	158	.731	.82	9,400
May	111	71	83.1	.385	.44	5,110
June	74	52	59.2	.274	.31	3,520
July	53	19	42.8	.198	.23	2,630
August 1–3	17	17	17.0	.079	.01	101
September						

SESPE CREEK AT SESPE, CALIF.

LOCATION.—In NW. ¼ sec. 25, T. 4 N., R. 20 W., at Southern Pacific Co.'s bridge 1½ miles above junction with Santa Clara River, and half a mile southeast of Sespe, Ventura County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 450 feet above sea level.

RECORDS AVAILABLE.—August 31, 1911, to September 30, 1913.

GAGE.—Vertical staff in two sections, installed January 7, 1913; lower section is fastened to boulder in center of channel just below bridge; upper section is on left abutment of bridge. Original gage, at same datum, was an inclined staff in two sections on left bank at bridge.

CHANNEL AND CONTROL.—Gravel; will shift at high stages.

DISCHARGE MEASUREMENTS.—Made from railroad bridge or by wading.

DIVERSIONS.—The Fillmore Irrigation Co.'s canal, which takes out about 4 miles above the station, furnishes water for irrigation and domestic use at Sespe and Fillmore.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined except for high water. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for low and medium stages; high-water records fair.

Discharge measurements of Sespe Creek at Sespe, Calif., for 1911–1913.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*	1912.		*Feet.*	*Sec.-ft.*
Oct. 26	Lasley Lee	4.20	7.0	Dec. 4	F. C. Ebert	3.77	1.2
1912.				1913.			
Jan. 8	F. C. Ebert	4.42	19	Jan. 7	F. C. Ebert	3.74	1.3
26	do	4.34	12	29	do	4.38	20
Feb. 3	do	4.25	9.4	Feb. 12	do	4.80	62
28	do	4.15	5.0	27	do	5.08	761
Mar. 12	do	6.33	1,510	Mar. 7	do	5.17	417
15	do	5.53	246	Apr. 2	do	4.28	89
24	do	4.92	83	29	do	3.98	49
Apr. 24	do	4.97	94	May 21	do	3.56	14
May 13	do	4.70	52	June 5	do	3.53	19
June 26	do	4.16	9.2	25	do	3.32	4.1
Aug. 7	do		Dry.	Aug. 13	do		Dry.

NOTE—Dec. 4, 1912, point of zero flow determined to be at gage height about 3.3 feet.

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Daily discharge, in second-feet, of Sespe Creek at Sespe, Calif., for 1911–1913.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1911.			1911.			1911.		
1		7.0	11		7.9	21		7.0
2		7.0	12		9.2	22		7.0
3		7.0	13		9.2	23		9.2
4		7.9	14		9.2	24		11
5		7.0	15		10	25		11
6		7.0	16		10	26		11
7		7.9	17		10	27		11
8		7.9	18		10	28		11
9		7.9	19		7.0	29		11
10		7.9	20		7.0	30		12
						31	6.4	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1911–12.										
1	16	10	13	21	11.3	7.0	89	65	19	1.8
2	14	10	14	21	10.4	7.9	84	65	19	2.3
3	14	10	13	21	10.4	9.2	80	65	17	2.3
4	13	10	14	21	10.4	140	72	58	17	1.8
5	13	10	14	19	10.4	1,980	68	58	14.2	1.8
6	13	10	17	19	10.4	373	65	65	14.2	1.8
7	11	9.2	20	19	10.4	2,280	58	80	14.2	1.8
8	11	10	23	19	10.4	1,980	89	80	12.4	1.8
9	11	10	20	19	10.4	390	770	72	11.3	1.5
10	11	10	20	19	10.4	1,180	1,180	65	11.3	1.3
11	10	10	20	19	10.4	200	1,700	50	9.2	.....
12	10	12	20	21	10.4	770	490	50	7.9	.....
13	10	12	19	19	10.4	1,430	305	50	7.9	.....
14	17	14	19	19	10.4	305	240	44	7.0	.....
15	11	17	19	19	10.4	240	200	44	7.0	.....
16	13	16	20	17	10.4	240	200	44	5.6	.....
17	13	14	19	17	9.2	200	220	44	5.6	.....
18	10	14	17	16	9.2	165	182	40	4.7	.....
19	9.2	16	17	14.2	9.2	140	165	40	4.7	.....
20	7.9	14	19	14.2	9.2	129	182	37	4.1	.....
21	7.0	14	19	14.2	9.2	118	140	37	4.1	.....
22	7.0	13	20	14.2	9.2	102	118	35	3.2	.....
23	7.0	13	20	14.2	9.2	98	108	31	3.2	.....
24	7.0	13	19	14.2	9.2	84	80	31	3.2	.....
25	6.4	11	19	16	9.2	89	80	37	3.2	.....
26	7.0	13	19	16	7.9	102	72	37	3.2	.....
27	9.2	13	20	16	7.9	118	72	31	2.7	.....
28	10	11	20	14.2	7.0	108	72	31	2.7	.....
29	11	13	20	12.4	7.0	108	72	27	2.7	.....
30	11	13	20	12.4	.....	98	72	25	2.3	.....
31	10	.....	19	11.3	.....	89	.....	21	.....	.....

NOTE.—Daily discharge determined from fairly well defined rating curve applicable as follows: Aug. 31 to Dec. 31, and Jan. 1 to Sept. 30. Discharge interpolated Nov. 1–6 and 12–13. No flow from July 11 to Sept. 30.

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Daily discharge, in second-feet, of Sespe Creek at Sespe, Calif., for 1911–1913—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1912–13.										
1	.....	.....	1.5	2.0	20	380	81	44	7.5	0.7
2	.....	.....	2	1.5	20	335	81	40	7.5	.....
3	.....	.....	2	.7	20	335	81	40	9.5	.....
4	.....	.....	2	.6	20	380	81	40	9.5	.....
5	.....	.....	1.5	1.5	20	430	81	40	9.5	.....
6	.....	.....	2	1.5	21	390	81	40	30	.....
7	.....	.....	2	1	21	405	78	52	21	.....
8	.....	.....	2	.9	1,700	380	78	40	14	.....
9	.....	.....	2	1.5	200	335	71	40	9.5	.....
10	.....	.....	2	3	122	290	71	30	9.5	.....
11	.....	3.0	2	4.5	80	290	67	30	9.5	.....
12	.....	.....	2	5	65	268	67	23	9.5	.....
13	.....	.....	2	3.5	53	213	64	21	9.5	.....
14	.....	.....	2	7.5	48	187	71	21	6	.....
15	.....	.....	4.5	620	40	146	71	18	6	.....
16	.....	.....	3.5	1,700	38	140	71	16	4	.....
17	.....	.....	3	200	36	140	67	16	4	.....
18	.....	.3	2	200	34	170	67	14	4	.....
19	.....	.2	3	98	33	140	64	14	2.5	.....
20	.....	.9	3	65	33	140	64	14	2.5	.....
21	.....	3.0	3	38	50	140	50	12	2.5	.....
22	.....	3.5	3	34	29	140	50	11	2.5	.....
23	.....	1.5	3	31	98	115	46	9.5	2.5	.....
24	.....	.9	3	29	16,300	115	46	9.5	2.5	.....
25	.....	1.5	3	23	8,200	115	50	9.5	1.5	.....
26	.....	1.5	3	21	1,220	104	52	9.5	2.5	.....
27	.....	1.5	3	21	2,480	104	50	9.5	14	.....
28	.....	1.5	2	20	430	94	46	9.5	6	.....
29	.....	2	3	20	.....	94	50	9.5	6	.....
30	.....	2	3	20	.....	86	46	9.5	6	.....
31	.....	.....	3	20	.....	86	.....	9.5	.....	.....

NOTE.—Daily discharge determined from well defined rating curves applicable as follows: Nov. 11, 1912, to Feb. 24, 1913; Feb. 25 to July 1, 1913. No flow July 2 to Sept. 30. Discharge Feb. 24 and 25 estimated from extension of rating curve; records only approximate.

Monthly discharge of Sespe Creek at Sespe, Calif., for 1911–1913.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1911.					1912–13.				
September	12	7.0	8.84	526	October	0.0	0.0	0.00	0
					November	3.5	.0	.78	46
1911–12.					December	4.5	1.5	2.52	155
October	17	6.4	10.7	658	January	1,700	.6	103	6,330
November	17	9.2	12.2	726	February	16,300	20	1,120	62,200
December	23	13	18.5	1,140	March	430	86	216	13,300
January	21	11.3	17.0	1,040	April	81	46	64.8	3,860
February	11.3	7.0	9.65	555	May	52	9.5	22.6	1,390
March	2,280	7.0	428	26,300	June	30	1.5	7.70	458
April	1,700	58	244	14,500	July	.7	.0	.02	1
May	80	21	47.1	2,900	August	.0	.0	.00	0
June	19	2.3	8.13	484	September	.0	.0	.00	0
July	2.3	.0	.59	36.3					
August	.0	.0	.00	.0	The year	16,300	.0	121	87,700
September	.0	.0	.00	.0					
The year	2,280	0	66.7	48,300					

SANTA PAULA CREEK NEAR SANTA PAULA, CALIF.

LOCATION.—At east boundary of Ojai grant, in Santa Barbara National Forest, just below mouth of Sisar Creek, half a mile above Onlauf Canyon, 6 miles above junction with Santa Clara River, and 5½ miles northwest of Santa Paula, Ventura County.

DRAINAGE AREA.—33.4 square miles (measured on topographic maps).

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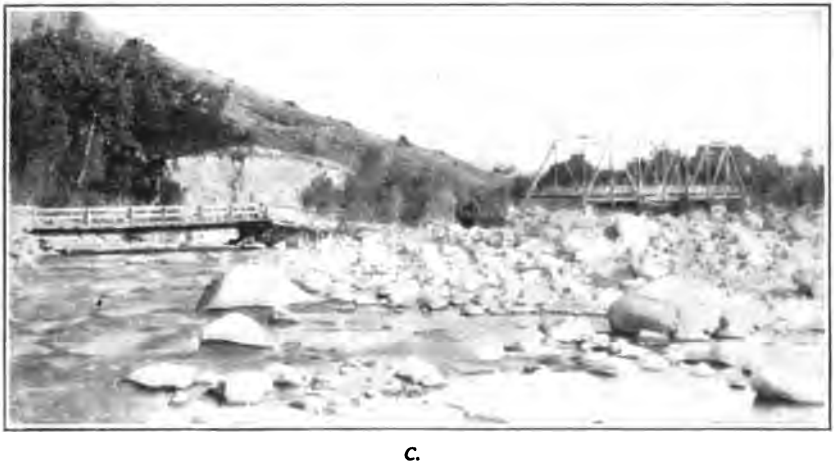
A.

B.



C.

VIEWS AFTER FLOOD OF 1914.

A, Arroyo Seco near Los Angeles, Calif.; *B*, Ventura River near Ventura, Calif.; *C*, Santa Paula Creek near Santa Paula, Calif.

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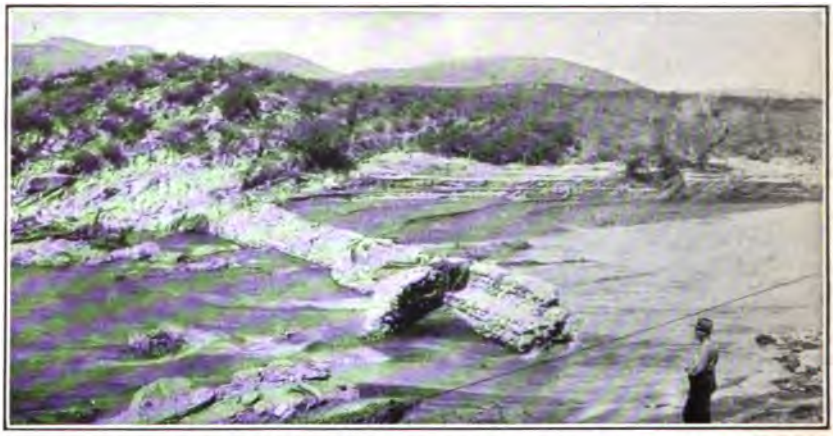
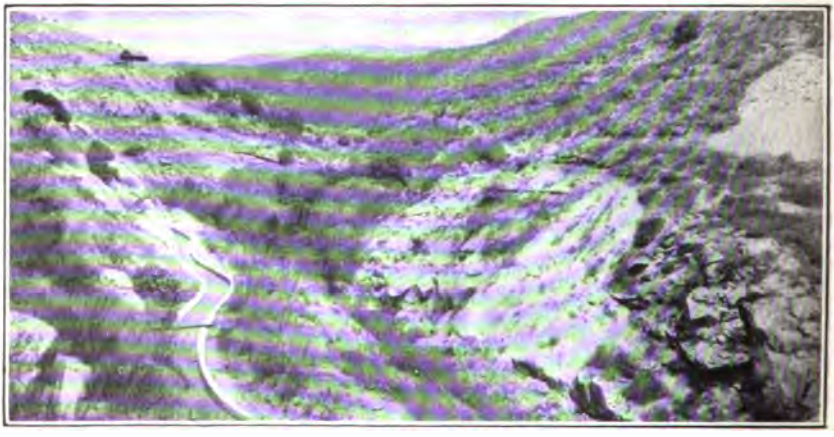


A. SAN DIEGO RIVER AT MISSION DAM, NEAR SANTEE, CALIF., AFTER FLOOD OF 1916.

B. GAGING STATION ON COTTONWOOD CREEK NEAR DULZURA, CALIF.



C. DULZURA CONDUIT AT BARRETT DAM SITE, CALIF.

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ELEVATION.—About 950 feet above sea level.

RECORDS AVAILABLE.—March 24, 1912, to September 30, 1913.

GAGE.—Vertical staff fastened to tree on left bank, about 600 feet below mouth of Sisar Creek.

DISCHARGE MEASUREMENTS.—Made from highway bridge 1 mile below gage or by wading. (See Pl. XVII, *C*.)

CHANNEL AND CONTROL.—Boulders and gravel; shifts at high stages.

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined except for high water. Daily discharge ascertained by applying mean daily gage height to rating table. Records good for low and medium stages; high-water records fair.

Discharge measurements of Santa Paula Creek near Santa Paula, Calif., for 1911–1913.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*	1912.		*Feet.*	*Sec.-ft.*
Oct. 27	F. C. Ebert	2.40	4.9	Dec. 3	F. C. Ebert	2.33	2.9
27	Lasley Lee	2.40	4.8	1913.			
1912.				Jan. 31	F. C. Ebert	2.42	5.2
Jan. 6	F. C. Ebert	2.43	4.9	Mar. 1	do	3.92	83
Feb. 2	do	2.41	4.7	7	do	3.80	66
Mar. 14	do	3.07	39	Apr. 30	do	3.26	13
24	do	2.70	17	May 22	do	3.26	7.5
Apr. 24	do	2.88	26	June 5	do	3.07	7.4
May 14	do	2.62	13	24	do	3.11	5.3
June 25	do	2.39	6.3	Aug. 13	do	2.97	2.6
Aug. 5	do	2.27	3.1				
20	H. D. McGlashan	2.27	2.9				

Daily discharge, in second-feet, of Santa Paula Creek near Santa Paula, Calif., for 1912–13.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912.							
1	.....	17	22	12	5.5	4.5	3.2
2	.....	20	22	12	5.5	4.5	3.2
3	.....	17	22	12	5.5	4.5	3.2
4	.....	20	17	12	5.5	4.5	3.2
5	.....	17	22	12	5.5	3.2	3.2
6	.....	17	28	12	5.5	3.5	3.2
7	.....	17	17	8.5	5.5	3.5	3.2
8	.....	17	17	8.5	3.5	3.5	3.2
9	.....	80	17	8.5	5.5	3.5	3.2
10	.....	158	17	8.5	5.5	3.5	3.2
11	.....	104	17	8.5	5.5	3.5	3.2
12	.....	34	17	8.5	5.5	3.5	3.2
13	.....	22	20	7.0	5.5	3.5	3.2
14	.....	22	17	8.5	5.5	3.5	3.2
15	.....	17	17	8.5	5.5	3.5	3.2
16	.....	34	17	8.5	5.5	3.5	3.2
17	.....	50	17	8.5	5.5	3.5	3.2
18	.....	80	17	8.5	5.5	3.5	3.2
19	.....	34	12	8.5	5.5	3.5	3.2
20	.....	34	12	8.5	5.5	3.2	3.2
21	.....	34	12	8.5	5.5	3.2	3.2
22	.....	130	12	8.5	5.5	3.2	3.2
23	.....	34	12	8.5	5.5	3.2	3.2
24	17	130	12	5.5	5.5	3.2	3.2
25	22	28	14	7.0	5.5	3.2	3.2
26	34	22	14	5.5	5.5	3.2	3.2
27	28	28	12	5.5	5.5	3.2	3.2
28	22	22	12	5.5	5.5	3.2	3.2
29	22	22	12	5.5	4.5	3.2	3.2
30	17	22	12	5.5	4.5	3.2	3.2
31	28	.....	12	.....	4.5	3.2	.....

NOTE.—Daily discharge determined from a rating curve well defined between 10 and 80 second-feet.

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Daily discharge, in second-feet, of Santa Paula Creek near Santa Paula, Calif., for 1912–13—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	2.5	2.5	2.5	2.5	5.5	80	16	13	7.5	5	3	2
2	2.5	2.5	2.5	2.5	5.5	80	16	13	7.5	5	3	2
3	2.5	2.5	2.5	2.5	6.5	80	16	13	7.5	5	3	2
4	2.5	2.5	2.5	2.5	6.5	67	16	10	7.5	5	3	2
5	2.5	2.5	2.5	2.5	6.5	67	16	10	7.5	4.5	3	2
6	2.5	2.5	2.5	2.5	6.5	67	16	10	7.5	4.5	3	2
7	2.5	2.5	2.5	2.5	6.5	67	16	10	7.5	4.5	2.5	2
8	2.5	2.5	2.5	2.5	12	54	19	10	7.5	4.5	2.5	2
9	2.5	2.5	3	5	12	54	19	10	7	4.5	2.5	2
10	2.5	2.5	3	5	12	54	19	10	7	4.5	2.5	2
11	2.5	2.5	3	5	12	54	19	10	7	4.5	2.5	2
12	2.5	2.5	3	5	12	42	17	10	7	4.5	2.5	2
13	2.5	2.5	2.5	5	12	42	19	10	6.5	4	2.5	2
14	2.5	2.5	2.5	5	12	42	19	10	6.5	4	2.5	2
15	2.5	2.5	2.5	187	10	32	19	10	6.5	4	2.5	2
16	2.5	2.5	2.5	23	10	32	19	10	6.5	4	2.5	2
17	2.5	2.5	2.5	28	8	32	19	10	6	4	2.5	2
18	2.5	2.5	2.5	22	8	32	23	9	6	4	2.5	2
19	2.5	2.5	2.5	22	8	32	23	9	6	4	2.5	2
20	2.5	2.5	2.5	17	8	32	16	8	6	4	2.5	2
21	2.5	2.5	2.5	17	8	32	16	8	5.5	3.5	2.5	2
22	2.5	2.5	2.5	12	8	32	16	7.5	5.5	3.5	2.5	2
23	2.5	3	2.5	8	12	32	16	7.5	5.5	3.5	2.5	2
24	2.5	2.5	4	6.5	1,560	32	16	7.5	5.5	3.5	2.5	2
25	2.5	2.5	4.5	5	490	32	16	7.5	5.5	3.5	2.5	2
26	2.5	2.5	2.5	5	168	23	16	7.5	5.5	3.5	2.5	2
27	2.5	2.5	2.5	5	168	10	16	7.5	5	3.5	2.5	2
28	2.5	2.5	2.5	5	152	10	16	7.5	5	3.5	2.5	2
29	2.5	2.5	2.5	5	.....	10	16	7.5	5	3	2.5	2
30	1.5	2.5	2.5	5	.....	10	16	7.5	5	3	2.5	2
31	1.5	.....	2.5	5.5	.....	10	.....	7.5	.....	3	2.5	.....

NOTE.—Daily discharge determined from rating curves applicable as follow: Oct. 1, 1912, to Feb. 23, 1913, fairly well defined below 80 second-feet; Feb. 26 to May 17, fairly well defined. Discharge Feb. 24 and 25, estimated.

Monthly discharge of Santa Paula River near Santa Paula, Calif., for 1912–13.

[Drainage area, 33.4 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.
March 24–31	34	17	23.8	0.713	0.21	378
April	158	17	42.8	1.28	1.43	2,550
May	28	12	16.1	.482	.56	990
June	12	5.5	8.50	.254	.28	506
July	5.5	4.5	5.46	.162	.19	332
August	4.5	3.2	3.50	.105	.12	215
September	3.2	3.2	3.20	.096	.11	190
The period	.....	.....	.....	.....	.....	5,160
1912–13.						
October	2.5	1.5	2.44	.073	.08	150
November	3.0	2.5	2.52	.075	.08	150
December	4.5	2.5	2.53	.076	.09	156
January	187	2.5	13.4	.401	.46	824
February	1,560	5.5	98.1	2.94	3.08	5,450
March	80	10	34.2	1.02	1.18	2,100
April	23	16	17.4	.521	.58	1,040
May	13	7.5	9.29	.278	.32	571
June	7.5	5.0	6.37	.191	.21	379
July	5.0	3.0	4.13	.124	.14	254
August	3.0	2.5	2.60	.078	.09	160
September	2.0	2.0	2.00	.060	.07	119
The year	1,560	1.5	15.7	.470	6.36	11,400

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MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the Santa Clara River basin at points other than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous measurements in Santa Clara River drainage basin, 1895–1917.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Aug. 9, 1898	Santa Clara River	Pacific Ocean	Newhall ranch	10.8
Aug. 19, 1899	do	do	do	8.4
Oct. 8, 1900	do	do	do	10.2
Apr. 30, 1902	do	do	do	8.0
June 16, 1903	do	do	do	6.2
Sept. 16, 1903	do	do	do	5.4
Oct. 19, 1905	do	do	do	5.3
June 18, 1898	do	do	1 mile east of Camulor	25.7
Aug. 11, 1898	do	do	do	17.4
Aug. 19, 1899	do	do	do	1.24
Apr. 30, 1903	do	do	do	25.0
June 17, 1903	do	do	do	21.1
Sept. 16, 1903	do	do	do	5.1
Oct. 19, 1905	do	do	do	10.1
Mar. 15, 1899	do	do	In ciénaga, 1 mile east of Fillmore	3.6
Aug. 18, 1899	do	do	Near Santa Paula	10.3
May 3, 1903	do	do	do	127.0
June 22, 1903	do	do	do	22.0
July 16, 1903	do	do	do	23.4
Aug. 13, 1903	do	do	do	20.8
Sept. 18, 1903	do	do	do	18.2
Oct. 21, 1905	do	do	do	27.0
Aug. 14, 1903	do	do	Below head of Santa Clara Water & Irrigation Co.'s canal.	3.3
Sept. 18, 1903	do	do	do	3.9
Oct. 21, 1905	do	do	do	24.0
June 4, 1913	do	do	Above mouth of San Francisquito Creek at Castac.	13
Aug. 13, 1913	do	do	do	12
Oct. 21, 1913	do	do	do	12
Jan. 2, 1914	do	do	do	14
Sept. 18, 1914	do	do	do	17
Oct. 11, 1912	do	do	Discontinued U. S. G. S. gaging-station at Fillmore, Calif.	26
Nov. 6, 1912	do	do	do	17
Dec. 4, 1912	do	do	do	17
Jan. 7, 1913	do	do	do	16
June 25, 1913	do	do	do	15
Apr. 30, 1903	San Francisquito Creek.	Santa Clara River.	Road crossing, Newhall ranch	2
June 16, 1903	do	do	do	2.4
Sept. 16, 1903	do	do	do	2
Oct. 19, 1905	do	do	do	1.3
Aug. 11, 1898	do	do	Near mouth	2.07
Aug. 13, 1913	do	do	do	1.5
Oct. 21, 1913	do	do	do	1.2
Jan. 2, 1914	do	do	do	2
Apr. 8, 1914	Castaic Creek	do	Southern Pacific Co.'s bridge near mouth.	39
Mar. 10, 1895	Piru Creek	do	Robertson mill	3.54
Jan. 21, 1896	do	do	Smith's	18
Jan. 31, 1896	do	do	do	13.3
Aug. 11, 1898	do	do	French house	.92
Mar. 14, 1899	do	do	Narrows near Dutton's	5
Mar. 16, 1899	do	do	Road crossing, Piru	61
Mar. 17, 1899	do	do	do	152
Aug. 19, 1899	do	do	Head of Piru pipe line	1.3
Oct. 8, 1900	do	do	Ditches from lower creek	2.2
May 1, 1903	do	do	Dunton ranch	57
Do	do	do	Southern Pacific Co.'s bridge	55
June 17, 1903	do	do	do	2.7
Sept. 17, 1903	do	do	do	.1
June 17, 1903	do	do	1 mile above Esperanza	3.9
Oct. 20, 1905	do	do	do	3.4
Do	do	do	1 mile above Piru	5.3
Sept. 3, 1911	do	do	900 feet above Southern Pacific Co.'s bridge, Piru.	16
Oct. 21, 1913	do	do	Abandoned U. S. G. S. gaging station, Piru.	9.7
Jan. 3, 1914	do	do	do	34
Sept. 18, 1914	do	do	do	14
Dec. 25, 1916	do	do	N.W. ¼ sec. 13, T. 6 N., R. 18 W., opposite U. S. G. S. bench mark "2060", about 4 miles below mouth of Canada de los Alamos.	34

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Miscellaneous measurements in Santa Clara River drainage basin, 1895–1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Dec. 15, 1896	Gorman Creek	Piru Creek	Below Gorman Station	0.2
Aug. 11, 1898	Sespe Creek	Santa Clara River		2.5
Mar. 15, 1899	do		Head of Water Co.'s canal	8.3
Aug. 18, 1899	do	do	do	1.9
May 2, 1903	do	do	Southern Pacific Co.'s bridge	89
Sept. 17, 1903	do	do	Below canal intake	.1
Oct. 20, 1905	do	do	do	4.8
Oct. 21, 1913	do	do	Sespe	[b] .0
Jan. 4, 1914	do	do	do	29
Jan. 5, 1914	do	do	do	28
Apr. 12, 1914	do	do	1,000 feet above Southern Pacific Co.'s bridge.	140
May 26, 1914	do	do	Near Sespe	81
Do	do	do	Sespe	57
June 11, 1916	do	do	Hartman's ranch	14
Apr. 3, 1916	do	do	Railroad bridge, Sespe	127
May 2, 1916	do	do	do	41
June 11, 1916	Hot Springs Creek	Sespe Creek	Mouth	2.5
Do	Alder Creek	do	1 mile above mouth	1.2
Mar. 2, 1916	West Fork of Sespe Creek.	do	Mouth	13
Mar. 13, 1916	do	do	do	11
Mar. 28, 1916	do	do	do	5.9
Apr. 20, 1916	do	do	do	5.5
Apr. 24, 1916	do	do	do	5.4
May. 24, 1916	do	do	do	3.4
June 20, 1916	do	do	do	2.5
Sept. 14, 1916	do	do	do	1.5
Jan. 4, 1917	do	do	do	10
Feb. 5, 1917	do	do	do	8.9
Mar. 3, 1916	Tar Creek	do	do	14
Mar. 13, 1916	do	do	do	9.8
Apr. 1, 1916	do	do	do	5.3
Apr. 21, 1916	do	do	do	2
May 30, 1916	do	do	do	.5
Sept. 14, 1916	do	do	do	[b] 0
Mar. 7, 1916	Coldwater Creek	do	do	2
Mar. 14, 1916	do	do	do	1.6
Jan. 4, 1917	do	do	do	2
Feb. 6, 1917	do	do	do	.6
Mar. 7, 1916	Pine Creek	do	do	6.1
Mar. 14, 1916	do	do	do	5.4
Mar. 31, 1916	do	do	do	4.2
Feb. 6, 1917	do	do	do	1.7
Mar. 7, 1916	Little Sespe Creek	do	do	4
Mar. 14, 1916	do	do	do	3.3
Mar. 23, 1916	do	do	do	2.1
Sept. 14, 1916	do	do	do	[b] 0
Jan. 4, 1917	do	do	do	2.8
Feb. 6, 1917	do	do	One-fourth mile above mouth	1.3
Aug. 18, 1899	Santa Paula Creek	Santa Clara River	Above Neeper schoolhouse	.85
May 3, 1903	do	do	5 miles above Santa Paula	28
Do	do	do	Santa Paula	19
Oct. 21, 1905	do	do	3 miles above Santa Paula	4.9
Oct. 21, 1913	do	do	Abandoned U. S. G. S. gaging station, Santa Paula.	1.5
Jan. 5, 1914	do	do	do	7.3
Apr. 8, 1914	do	do	do	35
May. 30, 1914	do	do	do	17
Oct. 27, 1911	Sisar Creek	Santa Paula Creek	Near mouth, just above U. S. G. S. gaging station on Santa Paula Creek, SW. ¼ NW. ¼ sec. 16, T. 4 N., R. 21 W.	1
Jan. 6, 1912	do	do	do	1.2
Feb. 2, 1912	do	do	do	1
Mar. 24, 1912	do	do	do	5.1
May 14, 1912	do	do	do	2.9
Aug. 5, 1912	do	do	do	[a] .3
Aug. 20, 1912	do	do	do	.5
Dec. 3, 1912	do	do	do	[a] 5
Jan. 31, 1913	do	do	do	.9
Mar. 1, 1913	do	do	do	16
Mar. 7, 1913	do	do	do	9.1
Apr. 30, 1913	do	do	do	2.4
May 22, 1913	do	do	do	1.4
June 5, 1913	do	do	do	1.6
June 24, 1913	do	do	do	.9
Aug. 13, 1913	do	do	do	.4
Oct. 21, 1913	do	do	Near Santa Paula	[a] 9.1
Jan. 5, 1914	do	do	do	8
Apr. 8, 1914	do	do	do	10
May. 30, 1914	do	do	do	4.2

[a] Estimated. [b] Stream dry.

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Miscellaneous measurements of diversions in Santa Clara River drainage basin for 1899–1918.

Date.	Name.	Diverts from—	Locality.	Discharge.
				Sec.-ft.
Aug. 19, 1899	Camulos ditch	Santa Clara River	1,000 feet below intake, 1 mile above Camulos.	17.6
Oct. 8, 1900	do	do	Head of wooden flume	11.4
June 17, 1903	do	do	Head	7.6
Sept. 16, 1903	do	do	do	11.6
Oct. 19, 1905	do	do	1,000 feet below head	7.6
Aug. 18 1899	Farmer's ditch	do		16.0
June 22, 1903	do	do	1 mile above Santa Paula	7.8
July 16, 1903	do	do	do	8.4
Aug. 13, 1903	do	do	do	8.6
Sept. 18, 1903	do	do	do	8.6
Oct. 21, 1905	do	do	do	7.2
May 13, 1912	Fillmore Irrigation Co.'s ditch.	Sespe Creek	One-fourth mile below intake, which is 4 miles above U. S. G. S. gaging station on Sespe Creek, near Sespe.	3.5
June 7, 1913	do	do	About 500 feet below intake, in sec. 1, T. 4 N., R. 20 W.	17.0
Feb. 6, 1917	do	do	One- fourth mile below intake	1.5
May 26, 1914	Fillmore Land & Water Co.'s canal.	do	At headgate near Sespe	17.0
Sept. 14, 1916	do	do	do	12.0
May 2, 1917	do	do	do	14.0
Aug. 2, 1918	do	do	1,000 feet below intake	20.0
Aug. 18, 1899	Grees ditch	Santa Clara River		8.6
June 22, 1903	do	do	1 mile above Santa Paula	11.0
July 16, 1903	do	do	do	5.8
Aug. 13, 1903	do	do	do	11.1
Sept. 18, 1903	do	do	do	7.4
Oct. 21, 1905	do	do	do	9.2
June 16, 1903	Newhall ditch	do	Southern Pacific Co.'s bridge	1.7
Sept. 16, 1903	do	do	do	1.8
June 17, 1903	Piru Land & Water Co.'s upper diversion.	Piru Creek	Near Esperanza	1.8
Sept. 17, 1903	do	do	do	1.2
Oct. 20, 1905	do	do	do	1.4
June 17, 1903	Piru Land & Water Co.'s lower diversion.	do	Southern Pacific Co.'s bridge	3.7
Sept. 17, 1903	do	do	do	1.0
Aug. 18, 1899	Richardson ditch	Santa Clara River		5.8
June 22, 1903	do	do	1 mile above Santa Paula	4.2
July 16, 1903	do	do	do	2.3
Aug. 13, 1903	do	do	do	1.2
Sept. 18, 1903	do	do	do	1.2
Jan. 25, 1912	Sabin canal	Piru Creek	Above Southern Pacific Co.'s bridge at Piru.	5.5
Nov. 7, 1912	do	do	do	4.6
Dec. 4, 1912	do	do	do	3.1
May 23, 1913	do	do	do	6.6
June 26, 1913	do	do	do	6.5
July 15, 1903	Santa Clara Water & Irrigation Co.'s canal.	Santa Clara River	Head	30.0
July 16, 1903	do	do	do	33.0
Aug. 14, 1903	do	do	do	31.6
Sept. 18, 1903	do	do	do	26.7
1905	do	do	Head, measured over weir	16.7
May 3, 1903	Santa Paula Water Co.'s ditch.	Santa Paula Creek	Head	5.6
June 22, 1903	do	do	do	10.1
Sept. 18, 1903	do	do	do	2.7
Sept. 17, 1903	Sespe Land & Water Co'.s canal.	Sespe Creek	One-half mile below intake	4.6
Oct. 20, 1905	do	do	do	6.6

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VENTURA RIVER BASIN.

GENERAL FEATURES.

Ventura River drains a small area lying almost wholly in Ventura County. The river rises in the eastern part of Santa Barbara County and flows in general southeastward to Matilija, where it turns and takes a course more nearly south to its entrance to the Pacific at Ventura.

GAGING-STATION RECORDS.

VENTURA RIVER NEAR NORDHOFF, CALIF.

LOCATION.—In N. ½ SW. ¼ sec. 28, T. 5 N., R. 23 W., just below junction of Matilija and North Fork of Matilija creeks and about 4 miles northwest of Nordhoff, Ventura County.

DRAINAGE AREA.—19.9 square miles (measured on topographic maps.)

ELEVATION.—About 900 feet above sea level.

RECORDS AVAILABLE.—October 23, 1911, to October 31, 1914.

GAGE.—Original vertical staff in three sections on right bank about 300 feet below junction of creeks; gage destroyed by flood of January, 1914. A new vertical staff, at an independent datum, installed March 17, 1914, about 50 feet below original site.

DISCHARGE MEASUREMENTS.—Made from cable about 200 feet below gage or by wading; equipment washed out February 20, 1914.

CHANNEL AND CONTROL.—Gravel and boulders; shifts during high water.

EXTREMES OF DISCHARGE.—1911–1914: Maximum stage probably about 15 feet February 20 or 21, 1914 (discharge unknown); minimum stage recorded, 1.90 feet October 1 to 3 and 13 to 18, 1913 (discharge, 2.5 second-feet).

DIVERSIONS.—Sheldon flume diverts water from North Fork of Matilija Creek above the station during the irrigation season. See miscellaneous measurements for discharge of flume.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. Rating curves well defined except for flood stages. Daily discharge ascertained by applying mean daily gage height to rating table. Records good. Flood discharge of 1914 not computed.

Discharge measurements of Ventura River near Nordhoff, Calif., for 1911–1914.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
Oct. 23	F. C. Ebert	2.18	11	Jan. 30	F. C. Ebert	2.28	11
23	Lasley Lee	2.18	11	Feb. 28	do	4.54	183
				Mar. 8	do	3.86	95
1912.				Apr. 28	do	2.88	20
Jan. 6	F. C. Ebert	2.27	14	May 22	do	2.62	13
Feb. 2	do	2.20	11	June 25	do	2.40	7.8
27	do	2.16	11	Aug. 14	do	2.07	4.0
Mar. 15	do	3.32	71	Oct. 22	do	1.94	2.8
23	do	2.87	35				
Apr. 23	do	2.90	32	1914.			
May 14	do	2.50	20	Jan. 16	F. C. Ebert	2.67	14
June 25	do	2.19	10	Feb. 13	do	4.93	151
Aug. 6	do	1.90	5.3	Mar. 17	do	2.67	178
20	H. D. McGlashan	1.90	4.0	Apr. 9	do	2.26	102
Oct. 8	F. C. Ebert	1.90	4.1	May 30	do	1.67	38
Dec. 2	do	1.93	5.0	Sept. 19	do	1.17	13

NOTE.—Measurements beginning Mar. 17, 1914, refer to new gage at new site and datum.

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Daily discharge, in second-feet, of Ventura River near Nordhoff, Calif., for 1911–1914.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	.....	13	12	14	12	12	30	29	14	8.5	5.2	4.3
2	.....	12	12	14	12	12	30	28	15	8.5	4.8	4.3
3	.....	12	12	14	12	12	30	27	15	9.2	4.8	4.5
4	.....	12	13	14	12	27	29	27	15	9.2	4.8	4.5
5	.....	12	13	14	12	395	28	26	14	8.5	4.5	4.5
6	.....	12	27	14	12	204	28	26	14	8.0	4.5	4.5
7	.....	12	17	14	12	56	28	28	14	7.6	4.5	4.5
8	.....	12	15	14	12	43	27	28	14	7.6	4.3	4.5
9	.....	12	15	14	12	43	37	27	14	7.0	4.3	4.5
10	.....	12	15	14	12	112	161	26	14	7.0	4.3	4.5
11	.....	13	15	14	12	112	100	24	14	6.4	4.5	4.3
12	.....	13	15	13	12	142	71	23	14	6.4	4.5	4.3
13	.....	13	15	12	12	269	63	22	14	6.4	4.5	4.3
14	.....	13	15	12	12	71	56	21	14	6.4	4.3	4.3
15	.....	13	15	12	11	68	56	20	13	6.0	4.5	4.3
16	.....	12	14	12	11	56	56	20	12	6.0	4.5	4.3
17	.....	12	14	12	11	49	52	19	11	6.0	4.5	4.3
18	.....	12	14	12	11	43	49	18	10	5.7	4.5	4.3
19	.....	12	14	12	10	40	46	18	10	5.7	4.5	4.0
20	.....	12	14	12	10	46	43	18	10	5.7	4.5	4.0
21	.....	12	14	12	10	46	43	18	10	5.7	4.5	3.7
22	.....	12	14	12	11	37	40	18	10	5.7	4.5	3.7
23	11	13	14	12	11	34	40	18	10	5.7	4.3	3.7
24	12	12	14	12	11	32	37	18	10	5.7	4.3	3.7
25	12	12	14	12	11	32	37	28	10	5.2	4.0	4.0
26	12	12	14	12	11	34	34	20	10	5.2	4.0	4.0
27	13	12	14	13	12	43	32	20	9.2	5.2	4.0	4.0
28	14	12	16	13	12	43	31	18	9.2	5.2	4.0	4.0
29	13	12	16	13	12	37	30	17	9.2	5.2	4.0	4.0
30	13	12	15	13	.....	34	30	16	8.5	5.2	4.0	3.7
31	13	.....	15	12	.....	32	.....	16	.....	5.2	4.0	.....

NOTE.—Daily discharge determined from fairly well defined rating curves applicable as follows: Oct. 23 to Dec. 3, 1911, and Jan. 1 to Sept. 30, 1912.

1912–13.												
1	3.5	4.5	4.5	5.5	12	170	39	20	12	8.0	5.5	3.5
2	3.5	4.5	5	5.5	12	155	33	20	12	7.5	5.5	3.5
4	4.5	4.5	5	5.5	12	128	28	20	11	7.5	5.5	3.5
4	4.5	4.5	5	5.5	12	109	28	20	11	7	5.5	3.5
5	4.5	4.5	5	5.5	12	98	28	20	11	7	5.5	3.5
6	4.5	4.5	5	5.5	12	98	28	20	11	6.5	5.5	3.5
7	4.5	4.5	5	5.5	26	93	28	19	11	6.5	5.5	3.5
8	4.5	4.5	5	5.5	168	88	28	19	11	6.5	5	3.5
9	4.5	4.5	5	6	57	88	26	19	11	6.5	5	3.5
10	4.5	5	5	6	40	88	23	19	10	6	5	3.5
11	4.5	5	5	6	32	79	23	19	10	6	4.5	3.5
12	4	4.5	5	6	28	70	23	19	10	5.5	4.5	3
13	4	4.5	5	6	26	62	23	19	10	5.5	4.5	3
14	4	4.5	5	8	24	62	23	16	10	5.5	4.5	3
15	3.5	4.5	5	56	24	58	22	16	10	5.5	4.5	3
16	3.5	4.5	5	106	22	54	22	16	10	5.5	4.5	3
17	3.5	4.5	5.5	63	20	54	28	15	10	5.5	4.5	2.5
18	3.5	4.5	5.5	32	20	54	28	14	10	5.5	4.5	2.5
19	3.5	4.5	5.5	24	20	54	28	14	10	5.5	4.5	2.5
20	4	4.5	5.5	20	20	54	28	14	10	5.5	4.5	2.5
21	4	4.5	5.5	18	20	54	28	14	10	5.5	4	2.5
22	4	4.5	5.5	18	20	50	28	13	10	5.5	4	2.5
23	4.5	4.5	5.5	16	26	50	28	13	9	5.5	4	2.5
24	4.5	4.5	5.5	16	784	50	28	12	9	5.5	4	2.5
25	4.5	4.5	5.5	16	664	50	23	12	8.5	5.5	4	2.5
26	4.5	4.5	5.5	15	452	46	23	12	8.5	5.5	3.5	2.5
27	4.5	4.5	5.5	15	296	42	21	12	8.5	5.5	3.5	2.5
28	4.5	4.5	5.5	14	201	42	21	12	8.5	5.5	3.5	2.5
29	4.5	4.5	5.5	14	.....	39	20	12	8	5.5	3	2.5
30	4.5	4.5	5.5	14	.....	39	20	12	8	5.5	3.5	2.5
31	4.5	.....	5.5	12	.....	39	.....	12	.....	5.5	3.5	.....

NOTE.—Daily discharge determined from rating curves applicable as follows: Oct. 1, 1912, to Feb. 24, 1913, fairly well defined below 200 second-feet (same as used for June 1 to Sept. 30, 1912, extending into high water); Feb. 25 to Sept. 30, 1913, well defined below 300 second-feet.

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Daily discharge, in second-feet, of Ventura River near Nordhoff, Calif., for 1911–1914—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1913-14.												
1	2.5	3.5	10	16	.....	142	63	34	23	16	10	10
2	2.5	3.5	10	16	.....	142	63	34	23	16	10	10
3	2.5	3.5	10	16	.....	133	63	34	23	14	10	10
4	2.5	3.5	10	14	.....	133	63	34	23	14	10	10
5	2.5	3.5	10	14	.....	124	58	34	20	14	10	10
6	2.5	3.5	10	14	.....	124	58	34	20	14	10	10
7	3.0	3.5	9	14	.....	116	58	34	20	14	10	10
8	3.0	3.5	9	14	.....	108	58	34	20	14	10	10
9	3.0	4.0	9	14	.....	101	58	31	20	14	10	10
10	2.5	4.5	9	14	.....	94	58	31	20	14	10	10
11	2.5	4.5	9	14	.....	87	58	31	20	14	10	10
12	2.5	12	9	14	.....	87	58	31	20	14	10	10
13	2.5	88	10	12	.....	80	53	31	20	14	10	10
14	2.5	19	10	12	.....	80	53	28	18	14	10	10
15	2.5	12	10	54	.....	74	53	28	18	14	10	8.5
16	2.5	10	10	260	.....	74	53	28	18	14	10	8.5
17	2.5	10	10	.....	174	74	53	28	18	14	10	8.5
18	2.5	12	10	.....	174	74	53	28	18	14	10	8.5
19	2.5	54	10	.....	163	68	53	28	18	14	10	8.5
20	2.5	23	10	.....	163	68	53	28	18	14	10	8.5
21	2.5	19	10	.....	152	68	48	28	18	14	10	8.5
22	2.5	16	19	.....	152	68	48	28	18	14	10	8.5
23	2.5	14	16	.....	142	68	48	26	18	14	10	8.5
24	2.5	12	14	.....	142	68	48	26	18	14	10	8.5
25	2.5	11	14	.....	142	68	48	26	18	14	10	8.5
26	3.0	11	12	.....	142	68	44	26	16	14	10	8.5
27	3.0	11	12	.....	142	68	44	26	16	12	10	8.5
28	3.0	10	14	.....	142	68	40	26	16	12	10	8.5
29	3.0	10	14	.....	142	68	40	26	16	12	10	8.5
30	3.5	10	21	.....	142	68	37	26	16	12	10	8.5
31	3.5	.....	16	.....	142	.....	34	.....	16	12	.....	8.5

NOTE.—No record Jan. 17 to Mar. 16.

Monthly discharge of Ventura River near Nordhoff, Calif., for 1911–1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1911-12.				
October 23-31	14	11	12.6	225
November	13	12	12.2	726
December	27	12	14.7	904
January	14	12	12.9	793
February	12	10	11.5	662
March	395	12	71.3	4,380
April	161	27	45.8	2,730
May	29	16	22.0	1,350
June	15	8.5	12.0	714
July	9.2	5.2	6.48	398
August	5.2	4.0	4.40	271
September	4.5	3.7	4.18	249
The period	.....	.....	.....	13,400
1912-13.				
October	4.5	3.5	4.18	257
November	5	4.5	4.53	270
December	4.5	5.5	5.23	322
January	106	5.5	17.8	1,090
February	764	12	109	6,050
March	170	39	71.4	4,390
April	39	20	25.8	1,540
1912-13—Con.				
May	20	12	15.9	978
June	12	8	10.0	595
July	8	5.5	5.97	367
August	5.5	3	4.48	275
September	3.5	2.5	2.95	176
The year	764	2.5	22.5	16,300
1913-14.				
October	3.5	2.5	2.68	165
November	88	3.5	13.5	803
December	21	9	11.5	707
January 1-16	260	12	32.0	1,020
March 17-31	174	142	150	4,460
April	142	68	88.8	5,280
May	63	34	52.2	3,210
June	34	26	29.6	1,760
July	23	16	18.8	1,160
August	16	12	13.8	848
September	10	10	10.0	595
1914.				
October	10	8.5	9.18	564

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VENTURA RIVER NEAR VENTURA, CALIF.

LOCATION.—Near southeast corner of Santa Ana grant, at highway bridge in Foster Memorial Park, below Ventura Water Co.'s diversion dam, one-fourth mile below mouth of Coyote Creek, three-fourths mile above Weldon Canyon, and about 5 miles north of Ventura, Ventura County, and mouth of river.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 200 feet above sea level.

RECORDS AVAILABLE.—September 4, 1911, to January 17, 1914.

GAGE.—Chain gage fastened to downstream side of bridge; destroyed by flood in January, 1914.

DISCHARGE MEASUREMENTS.—Made from bridge (destroyed by the flood of January, 1914) at gage or by wading. (See Pl. XVII, *B*, p. 492.)

CHANNEL AND CONTROL.—Gravel and boulders; shifts during high water.

EXTREMES OF DISCHARGE.—1911–1914: Maximum stage recorded, 9.0 feet at 11 a.m. February 24, 1913 (discharge, computed from extension of rating curve, 3,940 second-feet; undoubtedly discharge has been higher); minimum stage recorded, 1.3 feet December 30, 1912, to January 5, 1913 (discharge, 2 second-feet).

DIVERSIONS.—Diversion for irrigation from main river and tributaries above the station. Pipe line for irrigation and municipal water supply in the vicinity of Ventura heads just above the dam.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records usually good except for high water.

Discharge measurements of Ventura River near Ventura, Calif., for 1911–1914.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1911.		*Feet.*	*Sec.-ft.*	1912.		*Feet.*	*Sec.-ft.*
Oct. 24	F. C. Ebert	1.70	18	Oct. 8	F. C. Ebert	1.35	3.2
24	Lasley Lee	1.70	18	Dec. 2	do	1.37	3.4
1912.				1913.			
Jan. 5	F. C. Ebert	1.72	21	Jan. 30	F. C. Ebert	1.52	9.0
Feb. 3	do	1.64	16	Feb. 28	do	2.84	308
28	do	1.50	12	Mar. 7	do	2.23	106
Mar. 13	do	2.81	220	Apr. 29	do	1.74	19
14	do	2.59	136	May 22	do	1.73	14
23	do	2.05	50	June 25	do	1.63	9.3
Apr. 23	do	2.11	54	Aug. 14	do	1.52	7.5
May 15	do	1.81	25	Oct. 23	do	1.40	4.3
June 24	do	1.52	11				
Aug. 6	do	1.40	5.3	1914.			
20	do	1.38	4.8	Jan. 5	F. C. Ebert	1.48	7.2

Daily discharge, in second-feet, of Ventura River near Ventura, Calif., for 1911–1914.

Day.	Sept.	Day.	Sept.	Day.	Sept.
1911.		1911.		1911.	
1		11	23	21	18
2		12	23	22	20
3		13	23	23	21
4	23	14	23	24	20
5	23	15	21	25	20
6	23	16	20	26	20
7	23	17	21	27	18
8	23	18	18	28	21
9	23	19	14	29	21
10	[a] 23	20	20	30	21

[a] Discharge interpolated.

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Daily discharge, in second-feet, of Ventura River near Ventura, Calif., for 1911–1914—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.
1911-12.												
1	21	21	21	22	19	12	43	41	18	8	8	2.5
2	23	21	21	22	18	12	43	38	16	8	8	2.5
3	21	21	21	22	16	12	43	33	16	8	6.5	2.5
4	21	21	21	24	16	14	43	33	16	8	6.5	2.5
5	21	21	21	24	16	335	38	33	16	8	6.5	2.5
6	23	21	27	24	16	375	38	33	16	7.4	5.0	2.5
7	21	21	27	24	16	105	38	33	16	7.4	5.0	2.5
8	20	21	27	22	16	70	38	33	16	7.4	5.0	3.8
9	21	21	27	22	16	70	55	33	16	7.4	5.0	5.0
10	20	21	25	22	16	205	70	31	16	6.5	3.8	4.5
11	20	21	25	22	16	87	300	29	17	6.5	3.8	3.8
12	21	21	25	22	16	890	162	29	17	6.5	3.8	3.8
13	21	21	25	22	16	199	125	25	17	6.5	3.8	3.8
14	21	21	25	22	16	125	105	25	14	6.5	3.8	2.5
15	21	21	27	22	14	105	96	24	14	6.5	3.8	2.5
16	21	21	27	22	14	87	96	24	14	6.5	4.5	2.5
17	18	21	27	22	15	70	78	22	8.5	5.6	4.5	2.5
18	21	21	25	22	15	70	70	20	6.8	5.6	5.0	2.5
19	18	21	25	22	15	58	67	20	6.8	5.6	5.0	2.5
20	20	21	25	22	14	58	62	20	8.5	5.6	5.0	2.5
21	21	21	25	22	14	58	59	20	8.5	5.0	5.0	2.5
22	21	21	25	22	14	49	55	18	7.7	5.0	5.0	2.5
23	21	21	25	22	14	49	55	17	7.7	5.0	4.5	2.5
24	21	21	25	22	14	49	53	17	9.0	5.0	3.8	2.5
25	21	21	25	22	14	49	49	22	8	5.0	3.8	2.5
26	21	21	25	22	14	49	49	25	8	5.0	3.8	2.5
27	21	21	25	22	14	70	49	22	8	5.0	3.0	2.5
28	21	21	25	22	12	55	43	21	8	6.5	2.5	2.5
29	21	21	25	22	12	49	43	19	8	8	2.5	a 2.5
30	21	21	25	22	.....	43	43	18	8	8	2.5	a 2.5
31	21	.....	25	22	.....	43	.....	18	.....	8	2.5	.....

NOTE.—Daily discharge determined from fairly well defined rating curves applicable as follows: Sept. 4 to Dec. 31, 1911, and Jan. 1 to Sept. 30, 1912.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.
1912-13.												
1	a 4	5	a 5	2	8	220	37	21	10	12	12	6
2	a 4	5	5	2	8	186	37	21	10	12	12	6
3	a 4	5	5	2	8	154	37	21	10	12	8	6
4	a 4	5	5	a 2	8	125	37	21	10	12	8	5
5	a 4	5	5	2	8	125	37	21	10	12	8	5
6	a 4	5	5	3	8	111	37	22	10	12	8	5
7	a 4	5	5	4	18	111	37	22	10	12	9	5
8	4	5	5	4	535	97	37	22	10	12	9	5
9	4	5	5	4	a 300	97	37	24	10	12	9	6
10	4	5	5	4	62	97	31	24	10	12	10	6
11	4	5	5	4	49	84	31	23	10	12	a 10	6
12	4	5	3	4	33	77	31	23	10	12	a 9	6
13	4	5	4	4	33	72	31	22	10	12	a 9	6
14	4	5	4	5	29	72	31	21	10	12	9	7
15	4	5	4	175	25	72	31	21	10	12	a 9	7
16	4	5	4	105	25	62	31	19	10	12	a 8	5
17	4	5	4	96	25	62	31	19	10	12	a 8	5
18	4	5	4	55	22	72	31	17	10	12	a 7	5
19	4	5	4	33	22	72	31	17	10	12	a 7	5
20	4	5	4	25	22	62	31	16	10	12	a 6	6
21	4	5	4	24	22	62	31	16	10	12	6	6
22	4	5	4	22	22	52	31	13	10	12	6	6
23	4	5	4	18	25	52	25	12	10	12	6	6
24	4	5	4	18	3,200	52	25	12	12	12	6	6
25	4	5	4	13	1,950	52	25	12	12	12	6	6
26	4	5	4	13	615	52	23	12	12	12	6	6
27	4	5	4	13	485	52	23	12	12	12	6	6
28	4	5	4	13	290	52	23	10	12	12	6	6
29	4	5	4	13	.....	44	21	10	12	12	6	6
30	4	5	2	10	.....	44	21	10	12	12	6	5
31	4	.....	2	8	.....	37	.....	10	.....	12	6	.....

a Gage not read; discharge interpolated.

NOTE.—Daily discharge determined as follows:

Oct. 1, 1912, to Feb. 24, 1913, from fairly well defined rating curves (same as used for Jan. 1 to Sept. 30, 1912); Feb. 25 to May 5, 1913, and June 29 to Sept. 30, 1913, from curves fairly well defined below 400 second-feet; May 22 to June 28, 1913, from fairly well defined curves, May 6 to 21, 1913, by indirect method for shifting control; Oct. 1 to 7, 1912, estimated; Feb. 24 and 25 estimated by extension of rating curves; records are only approximate. Discharge interpolated for other days for which record is not given.

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Daily discharge, in second-feet, of Ventura River near Ventura, Calif., for 1911–1914—Con.

Day.	Oct.	Nov.	Dec.	Jan.	Day.	Oct.	Nov.	Dec.	Jan.
1913–14.					1913–14.				
1	5	4	5	6.5	16	5	6.5	5	445
2	5	4	5	6.5	17	5	5	5	125
3	5	4	5	8	18	5	5	5	.....
4	5	4	5	8	19	5	44	5	.....
5	5	4	5	8	20	5	17	5	.....
6	5	4	5	8	21	5	8	5	.....
7	5	4	5	8	22	5	8	12	.....
8	5	4	5	8	23	5	6.5	8	.....
9	5	4	5	8	24	5	6.5	6.5	.....
10	5	4	5	8	25	5	6.5	6.5	.....
11	5	4	5	8	26	5	6.5	6.5	.....
12	5	4	5	8	27	4.5	6.5	6.5	.....
13	5	27	5	8	28	4	5.5	6.5	.....
14	5	12	5	8	29	4	5	6.5	.....
15	5	8	5	160	30	4	5	6.5	.....
					31	4	.....	6.5	.....

NOTE.—Discharge determined from a well-defined rating curve. Discharge Dec. 25 and Jan. 1 interpolated; that of Jan. 15 estimated from station at Nordhoff.

Monthly discharge of Ventura River near Ventura, Calif., for 1911–1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1911.				
September 4–30	23	14	21.0	1,120
1911–12.				
October	23	18	20.8	1,280
November	21	21	21.0	1,250
December	27	21	24.8	1,520
January	24	22	22.3	1,370
February	19	12	15.1	869
March	890	12	114	7,010
April	300	38	70.2	4,180
May	41	17	25.7	1,580
June	18	6.8	12.2	726
July	8	5.0	6.55	403
August	8	2.5	4.55	280
September	5	2.5	2.82	168
The year	890	2.5	28.4	20,100
1912–13.				
October	4	4	4.0	246
November	5	5	5.0	298
December	5	2	4.2	258
January	175	2	22.6	1,390
February	3,200	8	281	15,600
March	220	37	83.3	5,120
April	37	21	30.7	1,830
May	24	10	17.6	1,080
June	12	10	10.5	625
July	12	12	12.0	738
August	12	6	7.8	480
September	7	5	5.7	339
The year	3,200	2	8.7	28,000
1913–14.				
October	5	4	4.85	298
November	44	4	7.88	469
December	12	5	5.71	351
January 1–17	445	6.5	45.8	1,540
The period	.....	.....	.....	2,660

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MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the Ventura River basin at points other than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous discharge measurements in Ventura River drainage basin for 1902–1914.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
Sept. 25, 1902	Ventura River	Pacific Ocean	Below diversion of Ventura City water system, Coyote Creek.	5.23
Sept. 19, 1903	do	do	Below upper diversion	3.7
Mar. 18, 1914	do	do	600 feet above junction with Coyote Creek.	280
Apr. 9, 1914	do	do	do	167
May 30, 1914	do	do	do	69
Sept. 25, 1902	North Fork of Ventura River.	Ventura River	In flume	.33
Do	Matilija Creek	do	Above junction with North Fork	2
Oct. 24, 1906	do	do	do	7.7
Oct. 23, 1911	do	do	300 feet above junction with North Fork.	9
Jan. 6, 1912	do	do	200 feet above junction with North Fork.	10
Oct. 24, 1906	North Fork of Matilija Creek.	do	500 feet above junction with Matilija Creek.	2.2
Oct. 23, 1911	do	do	100 feet above mouth, below Sheldon flume.	20
Jan. 6, 1912	do	do	do	3.4
Feb. 2, 1912	do	do	do	2.1
Feb. 27, 1912	do	do	do	2
Mar. 23, 1912	do	do	do	6.1
Apr. 23, 1912	do	do	do	7.4
May 14, 1912	do	do	do	3
June 25, 1912	do	do	Near mouth above Sheldon flume	2.1
Aug. 6, 1912	do	Ventura River	do	1
Aug. 21, 1912	do	do	Near mouth, below Sheldon flume.	.2
Oct. 8, 1912	do	do	Near mouth, above Sheldon flume, in SW.¼ NW.¼ sec. 28, T. 5 N., R. 23 W.	1.1
Dec. 2, 1912	do	do	do	1.5
Jan. 6, 1913	do	do	do	2.5
Jan. 30, 1913	do	do	do	2.1
Mar. 8, 1913	do	do	do	21
Apr. 29, 1913	do	do	do	3.6
May 22, 1913	do	do	do	2.8
June 25, 1913	do	do	do	2
Aug. 14, 1913	do	do	do	.8
Oct. 22, 1914	do	do	100 feet above mouth	1.1
Mar. 17, 1914	do	do	do	42
Apr. 9, 1914	do	do	do	22
May 30, 1914	do	do	do	9.8
Sept. 19, 1914	do	do	do	3.2
Apr. 9, 1914	Ojai Creek	do	Nordhoff	11
Oct. 24, 1906	San Antonio Creek	do	1½ miles, below Nordhoff	4.4
Mar. 18, 1914	do	do	La Crosse, near Norhoff	69
Apr. 9, 1914	do	do	do	46
May 30, 1914	do	do	do	24
Mar. 23, 1912	Coyote Creek	do	Near mouth	.8
Apr. 23, 1912	do	do	do	7.3
May 15, 1912	do	do	do	3
Aug. 6, 1912	do	do	do	1
Aug. 20, 1912	do	do	do	.5
Oct. 8, 1912	do	do	do	.4
Dec. 2, 1912	do	do	do	.5
Jan. 5, 1913	do	do	do	1.4
Jan. 30, 1913	do	do	do	1.3
Feb. 28, 1913	do	do	do	52
Mar. 7, 1913	do	do	do	16
Apr. 29, 1913	do	do	do	2.1
May 22, 1913	do	do	do	1.5
June 25, 1913	do	do	do	.6
Oct. 23, 1913	do	do	do	.3
Mar. 18, 1914	do	do	do	32
Apr. 9, 1914	do	do	do	16
May 30, 1914	do	do	do	6.9

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Miscellaneous measurements of diversions in Ventura River drainage basin for 1902–1914.

Date.	Name.	Diverts from—	Locality,	Discharge.
Oct. 23, 1911	Flume	North Fork	Intake	1.3
Sept. 26, 1902	Power ditch	do	Near intake	1.5
Sept. 19, 1903	do	do	Old mill	3.3
Oct. 23, 1911	Sheldon flume	North Fork of Matilija Creek.	Intake, SW.¼NW.¼sec. 28, T. 5 N., R. 23 W.	1.3
Aug. 6, 1912	do	do	do	1
Aug. 21, 1912	do	do	do	1.3
Oct. 8, 1912	do	do	do	1.1
Dec. 2, 1912	do	do	do	1.3
Jan. 30, 1913	do	do	do	0
May 22, 1913	do	do	do	1.4
June 25, 1913	do	do	do	1.6
Aug. 14, 1913	do	do	do	1
Oct. 22, 1913	do	do	50 feet below intake	1
Sept. 19, 1914	do	do	do	1.6
Sept. 19, 1903	Ventura Light & Power Co's. canal.		Upper diversion city supply	7

STREAM FLOW IN SANTA BARBARA COUNTY.

CARPINTERIA CREEK BASIN.

GOBERNADOR CREEK NEAR CARPINTERIA, CALIF.

LOCATION.—In SW. ¼ SW. ¼ sec. 14, T. 4 N., R. 25 W., 1,000 feet below junction of Eldorado and Steer creeks and 3¼ miles northeast of Carpinteria, Santa Barbara County.

DRAINAGE AREA.—Not measured.

ELEVATION.—About 800 feet above sea level.

RECORDS AVAILABLE.—June 24, 1916, to September 30, 1918 (not complete).

GAGE.—Vertical staff in two sections on left bank. A temporary gage at datum 1.11 feet lower was used June 24 to September 11, 1916.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet below gage or by wading.

CHANNEL AND CONTROL.—Small boulders and gravel; shifts. Banks high and not subject to overflow.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage recorded, 3.5 feet February 21, 1917 (discharge, 200 second-feet); minimum stage, 1.26 feet August 31, 1916 (discharge, 0.8 second-foot).

DIVERSIONS.—None above. The Gobernador Water Co. diverts at their submerged dam 1 mile below station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined. Gage read to hundredths occasionally. Daily discharge ascertained by applying gage height to rating table. Records good but only fragmentary.

COOPERATION.—Gage-height record and some discharge measurements furnished by K. C. Lillingston.

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Discharge measurements of Gobernador Creek near Carpinteria, Calif., for 1916–1918.

Date.	Made by —	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
June 24	F.C.Ebert	1.33	1.5	Feb. 20	K. C. Lillingston	2.75	110
Sept. 12	do	1.27	1.1	22	do	2.42	81
12	K.C.Lillingston	1.27	1.0	27	F. C. Ebert	1.73	23
Nov. 29	do	1.29	.9	Mar. 6	K. C. Lillington	1.50	9.1
29	F. C. Ebert	1.29	.9	June 28	F. C. Ebert	1.26	1.4
Dec. 25	K. C. Lillingston	1.52	6.4	Nov. 30	do	1.22	.8
1917.				1918.			
Jan. 4	K C. Lillingston	1.42	5.8	Apr. 11	F. C. Ebert	1.30	0.5
6	F. C. Ebert	1.37	4.9	May 25	do	1.22	3.1
Feb. 8	do	1.27	2.2	Aug. 1	do	1.16	1.2

Daily discharge, in second-feet, of Gobernador Creek near Carpinteria, Calif., for 1916–1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1916.					1916.				
1			1.1		16			1.1	1.0
2					17				
3		1.3			18			1.1	1.0
4			1.1		19				1.0
5					20		1.3		1.0
6					21				1.1
7					22		1.5	1.1	1.1
8		1.3			23				
9			.9	1.3	24	1.5			
10			1.1		25				
11			1.1	1.0	26		1.3	.9	
12		1.4		.9	27	1.5			
13					28				
14		1.3	1.1		29		1.5		.8
15					30	1.3			
					31		1.1	.8	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1						14		3.1				
2	5	1.0					4.6			1.8	1.8	
3	3.6											
4		.9		6			4.3			1.8	1.8	
5						16		2.5				
6				4.6		9						
7					2.3		4.3					
8		1.0	1.6	3.7	2.0			2.5	1.5		1.8	1.5
9				3.1								
10	13											
11							4.0			1.8		
12												
13		1.2	1.6							1.8		
14				2.5							1.8	
15					1.8						1.8	1.5
16	11.2		1.3			6.5		2.0	1.1			
17												
18									1.5		1.8	
19			1.3									
20	11.2	1.0			112					1.6		
21			1.6				3.7					
22	1.0				80	5.5						1.5
23			1.6						1.8		1.5	
24					19	5.5					1.5	
25			6	3.1							1.5	
26								1.8				
27	1.2				23		3.1			1.6		
28					18	4.9		1.6	1.8			
29		.9							1.8		1.5	
30	1.0	.9		2.8		4.9	3.1					
31											1.5	

NOTE.—Maximum stage Jan. 3, 2.11 feet (discharge, 52 second-feet).

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Daily discharge, in second-feet, of Gobernador Creek near Carpinteria, Calif., for 1916–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1				1.6	2.2							
2											1.2	
3					2.2					2.3	1.2	
4								5.5				
5		1.1		1.5	2.2					2.3		
6		1.8				22			3.1			
7			1.1									1.1
8			1.1	1.8	2.2				3.1			
9						15					1.6	
10										2.0		1.1
11	1.3				2.2			4.9				
12		1.5	1.1									
13	1.5						6		2.7	2.3	1.4	
14					2.2							
15	1.5			2.5				4.3	2.7			
16		1.5			2.2	15						1.2
17		1.5									1.8	
18								4.3	2.7	2.3		
19					2.2							
20						40				2.0		
21						29						1.2
22			1.5	2.2		26			2.7			
23					13	18					1.2	
24												
25					10	14		3.7		2.0		
26	1.1			2.5								
27					6	10						
28								3.1	2.3			2.0
29			1.5				5.5		2.3		1.1	
30	1.1	1.1		2.2								
31											1.2	

NOTE.—No gage-height record on days when no discharge is given.

Discharge measurements of diversion from Gobernador Creek near Carpinteria, Calif., for 1916–1917.

Date.	Discharge (sec.-ft.)	Remarks.
1916.		
Jan. 9	0.8	At intake which is below gaging station on creek.
June 24	1.4	Do.
Sept. 12	.9	Do.
1917.		
Feb. 8	.36	Gobernador Water Co.'s pipe line at first gate box below diversion dam.

NOTE.—Intake was moved about one-eighth mile upstream some time between Jan. 9 and June 24, 1916.

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MISSION TUNNEL.

MISSION TUNNEL NEAR SANTA BARBARA, CALIF.

Mission Tunnel, which is a part of the Santa Barbara water-supply system, extends through the Santa Ynez Mountains to Santa Ynez River. The length is 19,540 feet and the cross section, outside of lining, is about 7 by 8 feet. The Santa Ynez River (north) portal is in the NE. ¼ NE. ¼ sec. 15 and the Mission Canyon (south) portal, near the east quarter corner of sec. 33, T. 5 N., R. 27 W. When Gibraltar reservoir (under construction) is completed, the water from Santa Ynez River will be diverted for municipal use at Santa Barbara. The seepage into this tunnel, which is given in the following table, is measured over a weir in sand box just before it enters the water main. When water is diverted from Santa Ynez River into tunnel, it is measured over a weir at North Portal and this amount is deducted from weir record at South Portal.

Seepage, in second-feet, into Mission Tunnel, Santa Barbara, Calif., for 1912–1917.

Month.	1912	1913	1914	1915	1916	1917
Jan. 1	.....	.....	3.76	4.18	3.62	3.46
Feb. 1	5.18	5.56	4.90	4.18	5.18	3.70
Mar. 1	4.28	6.16	6.42	5.18	5.66	4.78
Apr. 1	3.90	5.06	5.16	5.18	5.06	4.38
May 1	3.90	5.02	5.30	5.00	4.66	3.94
June 1	.....	5.00	5.46	4.92	4.38	3.70
July 1	.....	4.76	5.46	4.72	4.40	3.78
Aug. 1	.....	4.40	5.32	4.38	4.24	3.50
Sept. 1	.....	4.20	5.02	4.28	4.18	3.54
Oct. 1	.....	3.88	4.62	4.16	3.96	.....
Nov. 1	.....	3.88	4.36	3.94	3.72	.....
Dec. 1	.....	3.88	4.14	3.62	3.72	.....

SAN ROQUI CREEK NEAR SANTA BARBARA, CALIF.

San Roqui Creek was measured during the year 1890 by Charles J. Johansen for the Pacific Improvement Co. The point of measurement was a short distance below the San Roqui Tunnel, which was being built from 1899 to 1901, the point of measurement being near an old dam in the stream.

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Discharge measurements of San Roqui Creek near Santa Barbara, Calif., for 1890.

[By Charles J. Johansen.]

At old diversion box below tunnel.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-feet.		*Sec.-feet.*		*Sec.-feet.*
Feb. 13	4.96	May 1	1.55	July 9	0.29
19	5.70	3	1.39	11	.26
21	9.61	5	1.39	13	.26
26	11.03	7	1.39	15	.26
Mar. 1	6.91	9	1.23	17	.26
3	6.28	11	1.23	19	.23
5	5.67	13	1.30	21	.20
6	5.67	15	1.23	23	.20
8	5.20	17	1.23	25	.20
10	5.20	19	1.23	27	.20
12	4.96	20	.63	29	.20
14	4.96	22	.65	31	.24
16	4.27	24	.65	Aug. 2	.24
18	4.27	26	.65	4	.24
20	4.73	28	.54	6	.24
22	4.73	30	.54	8	.26
24	4.27	June 2	.52	10	.26
26	3.84	4	.52	12	.26
28	3.84	5	.44	14	.23
30	3.84	7	.40	16	.23
Apr. 1	3.42	9	.35	18	.20
3	3.42	11	.35	19	.20
5	3.42	13	.35	22	.17
7	3.21	15	.35	Sept. 2	.19
9	3.21	17	38	3	.19
11	3.00	19	.38	4	.19
13	2.80	21	.38	5	.19
15	2.62	23	.38	6	.19
17	2.62	25	.35	7	.19
19	2.42	27	.35	8	.19
21	2.15	29	.29	10	.19
23	1.88	July 1	.29	11	.19
25	1.80	3	.29	12	.19
27	1.80	5	.29	13	.19
29	1.55	7	.29	14	.19

Below old diversion box.

Aug. 26	0.09	Sept. 4	0.04	Sept. 12	0.04
28	.09	6	.05	14	.04
30	.07	8	.04		
Sept. 2	.04	10	.04		

SAN JOSE CREEK NEAR GOLETA, CALIF.

The following measurements of San Jose Creek were made by Charles J. Johansen for the Pacific Improvement Co. The pipe line along the West Fork of San Jose Creek was not carrying water in the year 1890.

The point of measurement of the West Fork was a short distance above its junction with the East Fork, or main stream. The main stream, or East Fork, of San Jose Creek was gaged a short distance above its junction with the West Fork.

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Discharge measurements of San Jose Creek near Goleta, Calif., for 1890.

[By Charles J. Johansen.]

West Fork at mouth.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-feet.		*Sec.-feet.*		*Sec.-feet.*
Feb. 4	1.57	Apr. 21	0.32	June 16	0.27
15	.54	23	.32	18	.21
28	.94	25	.32	20	.19
Mar. 1	.60	27	.32	22	.21
3	.60	29	.35	24	.17
5	.54	May 1	.32	26	.19
7	.54	3	.26	28	.20
9	.50	5	.32	30	.20
11	.50	7	.32	July 2	.17
13	.44	9	.26	4	.17
15	.44	11	.26	6	.18
17	.44	12	.23	8	.17
19	.50	13	.26	10	.17
21	.44	15	.23	12	.17
23	.40	17	.26	14	.16
25	.40	19	.26	16	.16
27	.40	21	.22	18	.14
29	.40	23	.23	20	.16
31	.40	25	.23	22	.14
Apr. 2	.40	27	.23	24	.17
4	.40	29	.23	26	.16
6	.40	31	.21	28	.17
8	.40	June 2	.21	30	.17
10	.35	4	.21	Aug. 1	.17
12	.40	6	.21	2	.17
14	.40	8	.18	3	.17
15	.32	10	.23	4	.17
17	.29	12	.21	6	.17
19	.32	14	.21	8	.17

East Fork above West Fork.

	Sec.-feet.		*Sec.-feet.*		*Sec.-feet.*
Mar. 1	6.38	May 13	1.59	July 28	0.54
3	5.76	15	1.47	30	.60
5	5.17	17	1.47	Aug. 1	.63
7	4.88	19	1.47	2	.63
9	4.59	21	1.19	3	.63
11	4.03	23	1.19	4	.63
13	3.76	25	1.25	6	.63
15	3.51	27	1.19	8	.63
17	3.00	29	1.19	11	.83
19	3.51	31	1.19	13	.80
21	5.11	June 2	1.12	15	.82
23	4.59	4	.94	17	.65
25	4.59	6	.88	19	.60
27	4.34	8	.91	21	.60
29	4.31	10	.91	23	.60
31	4.03	12	.94	25	.65
Apr. 2	4.03	14	1.00	27	.65
4	3.51	16	1.12	29	.60
6	3.51	18	1.06	31	.60
8	3.51	20	1.00	Sept. 2	.57
10	3.25	22	.82	4	.49
12	3.00	24	.82	6	.44
14	3.00	26	.88	8	.57
15	1.97	28	.94	10	.44
17	2.24	30	.82	12	.54
19	2.10	July 2	.76	14	.50
21	2.10	4	.76	15	.68
23	1.97	6	.79	18	.60
25	1.97	8	.76	20	.65
27	1.97	10	.71	22	.60
29	2.10	12	.73	24	.71
May 1	1.97	14	.70	26	.71
3	1.72	16	.70	28	.82
5	1.72	18	.65	30	.71
7	1.72	20	.62	Oct. 2	.71
9	1.72	22	.60	4	.68
11	1.72	24	.60	6	.60
12	1.18	26	.63	7	.61

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LOMA ABAJO RIVER.

The Loma Abajo was measured by Charles J. Johansen for the Pacific Improvement Co., as indicated below. The point of measurement was a short distance above the junction with Gato Creek. At the time of these measurements no water was flowing in the pipe line from the Loma Abajo to the Ontare ranch.

Discharge measurements of Loma Abajo River in Santa Barbara County, Calif., for 1890.

Above junction with Gato Creek.

[By Charles J. Johansen.]

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-feet.		*Sec.-feet.*		*Sec.-feet.*
Feb. 7	3.84	May 14	0.46	July 27	0.21
14	3.00	16	.60	29	.21
27	5.67	18	.53	31	.23
Mar. 2	3.21	20	.53	Aug. 2	.24
4	3.00	20	.74	4	.26
6	2.88	22	.59	6	.20
9	2.80	24	.59	8	.18
11	2.24	26	.61	10	.24
13	2.06	28	.61	12	.27
15	2.06	30	.59	14	.30
17	1.88	June 1	.58	17	.12
21	1.88	3	.49	19	.13
23	1.88	5	.49	21	.17
25	1.55	7	.44	23	.11
27	1.55	9	.47	25	.12
29	1.55	11	.47	27	.12
31	1.39	13	.42	29	.11
Apr. 2	1.39	15	.50	31	.09
4	1.39	17	.56	Sept. 2	.07
6	1.23	19	.52	4	.08
8	1.23	21	.49	6	.12
10	1.08	23	.42	8	.06
12	1.23	25	.45	10	.09
14	1.08	27	.42	12	.07
17	.92	29	.37	14	.09
18	.76	July 1	.34	16	.09
20	.76	3	.42	18	.11
22	.76	5	.26	20	.08
24	.76	7	.24	22	.09
26	.76	9	.23	24	.12
28	.76	11	.24	26	.13
30	.76	13	.24	28	.14
May 2	.76	15	.24	30	.30
4	.68	17	.20	Oct. 2	.20
6	.68	19	.23	4	.14
8	.60	21	.17	6	.14
10	.60	23	.20		
12	.60	25	.18		

Date.	Locality.	Discharge.	Date.	Locality.	Dis. charge.
		Sec.-feet.			*Sec.-feet.*
Aug. 18, a. m.	Below Upper Forks	0.07	May 21	Upper Forks—West Fork.	0.07
18, p. m.	do	.04	June 4	Upper Forks—East Fork.	.31
21, a. m.	do	.11	4	Upper Forks—West Fork.	.06
21, p. m.	do	.04			
May 21	Upper Forks—East Fork.	.46			

GATO CREEK.

Gato Creek was measured by Charles J. Johansen for the Pacific Improvement Co., as given below. It was gaged a short distance above its junction with the Loma Abajo, and at the time of its measurement no water was being conveyed in the pipe line situated along this stream.

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Discharge measurements of Gato Creek at mouth, Santa Barbara County, Calif., for 1890.

[By Charles J. Johansen.]

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-feet.		*Sec.-feet.*		*Sec.-feet.*
Feb. 7	2.26	May 12	0.53	July 27	0.32
14	2.37	14	.46	29	.34
27	2.81	16	.53	31	.34
Mar. 2	2.05	18	.46	Aug. 2	.34
4	1.95	20	.46	4	.34
6	1.85	22	.59	6	.29
9	1.85	24	.59	8	.27
11	1.65	26	.58	10	.32
13	1.55	28	.56	12	.35
15	1.45	30	.56	14	.30
17	1.36	June 1	.54	15	.27
21	1.45	3	.49	17	.26
23	1.36	5	.50	19	.28
25	1.27	7	.49	21	.35
27	1.09	9	.44	23	.28
29	1.09	11	.50	25	.30
31	1.00	13	.45	27	.30
Apr. 2	1.00	15	.50	29	.28
4	.92	17	.58	31	.26
6	.92	19	.50	Sept. 2	.22
8	.92	21	.49	4	.22
10	.83	23	.44	6	.26
12	.83	25	.47	8	.26
14	.76	27	.45	10	.26
16	.76	29	.42	12	.26
17	.68	July 1	.44	14	.22
18	.76	3	.49	16	.22
20	.76	5	.34	18	.26
22	.76	7	.35	21	.30
24	.68	9	.32	22	.22
26	.68	11	.34	24	.22
28	.60	13	.34	26	.22
30	.68	15	.35	28	.37
May 2	.60	17	.33	30	.60
4	.68	19	35	Oct. 2	.42
6	.68	21	.27	4	.35
8	.60	23	.32	6	.30
10	.53	25	.26	7	.30

SANTA YNEZ RIVER BASIN.

GENERAL FEATURES.

Santa Ynez River is the only large stream wholly in Santa Barbara County. Its drainage basin lies north of the Santa Ynez Mountains, extending for a distance of about 80 miles parallel to the coast line, and comprising about 900 square miles. Four-fifths of this area is mountainous, including the north slope of the Santa Ynez and the south slope of the San Rafael Mountains, and furnishes practically all of the run-off.

Santa Ynez River rises near the boundary line between Ventura and Santa Barbara counties, where the Santa Ynez and San Rafael mountain ranges merge, flows nearly due west, and enters the Pacific Ocean at Surf, about 8 miles north of Point Arguello lighthouse, where the coast line makes a sharp turn to the north.

Small tributaries are numerous, but the only important one is Mono Creek, which drains 120 square miles of the southern slope of the San Rafael Mountains and joins the Santa Ynez River about 13 miles below its source.

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Elevations in the Santa Ynez Mountains range from 3,000 to 4,000 feet; in the San Rafael Mountains they range from 4,000 to 6,000 feet, with a few high peaks, such as Mount Pinos, extending 8,826 feet above sea level. The rocks throughout the entire basin consist of shale, sandstone, and conglomerate.

The greater part of the drainage basin is included in the Santa Barbara National Forest and is sparsely covered with brush and small trees, only small areas on the higher elevations having any considerable growth of timber.

The mean annual precipitation in the area ranges from 20 to 30 inches, the increase being gradual from the lower to the higher altitudes, and is almost entirely rain, there being only a light snowfall on the higher elevations during the winter.

Some small diversions for irrigation are made above Lompoc, and present water rights exceed the low-stage flow of the stream. The basin affords good storage sites. Several reservoirs have already been surveyed and their combined capacity far exceeds the mean annual run-off.

Gibraltar dam (Pl. XVI, *B*, p. 451), now under construction by the city of Santa Barbara, will form a reservoir which will be part of the municipal water-supply system.

GAGING-STATION RECORDS.

SANTA YNEZ RIVER NEAR SANTA BARBARA, CALIF.

LOCATION.—About on line between secs. 10 and 11, T. 5 N., R. 27 W., at Gibraltar dam site, just above mouth of Devil Canyon Creek, and about 7 miles north of Santa Barbara, Santa Barbara County. Mono Creek enters 3¼ miles above station. January 1 to June 20, 1903, station was maintained above junction with Mono Creek.

DRAINAGE AREA.—218 square miles at site of station maintained previous to August 2, 1916 (measured on topographic maps). 71 square miles at site above Mono Creek.

ELEVATION.—About 1,200 feet above sea level.

RECORDS AVAILABLE.—November 1, 1903, to April 30, 1907; October 1, 1907, to January 31, 1908; February 6, 1910, to September 30, 1918. Station was maintained above Mono Creek, about 4¾ miles above present site January 1 to June 20, 1903.

GAGE.—Friez water-stage recorder on left bank at north portal of the Santa Barbara water-supply tunnel, 50 feet upstream from base of Gibraltar dam; installed August 2, 1916. Previous gage was a staff in three sections on right bank about 900 feet downstream. April 13, 1911, gage datum was lowered 5.00 feet.

DISCHARGE MEASUREMENTS.—Made from cable at old gage or by wading at various sections. (See Pl. XVI, *C*.)

CHANNEL AND CONTROL.—Sand and gravel; shifts greatly during extremely high water; relatively permanent at low water. Control for new station, which is base of Gibraltar dam, is effective except for low-water periods when flashboards and sand bags are placed on crest. (See Pl. XVI, *B*.)

EXTREMES OF DISCHARGE.—1904–1918: Maximum discharge recorded, 23.0 feet at 8 p. m. January 25, 1914 (discharge, 13,100 second-feet); no flow during most of July to September, 1904, and part of September, 1916.

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DIVERSIONS.—City of Santa Barbara occasionally diverts water at gage into water-supply tunnel. The record at new site includes the diversion. From August 8 to September 30, 1916, and July 14 to September 30, 1917, practically all the water in the river was being diverted for municipal use.

REGULATIONS.—None.

ACCURACY.—Stage-discharge relation not permanent for station below Gibraltar dam; permanent at present site except for periods when flashboards and sand bags are in use on crest of dam. Rating curves for old gage generally fairly well defined except for high water; better defined for new gage. Staff gage below dam was read to hundredths once or twice daily; mean daily gage height, beginning August 2, 1916, determined by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. For short periods, during low water, interpolated between measurements or taken from weir records showing diversion into water-supply tunnel. Records generally fair, but are more accurate for periods when frequent discharge measurements were made; good for medium stage in 1916, throughout 1917, and for 1918 except during high water.

COOPERATION.—Gage-height record and most of discharge measurements furnished by city of Santa Barbara.

Discharge measurements of Santa Ynez River near Santa Barbara, Calif., for 1903–1904, 1906, and 1911–1918.

[Made by H. Rankin, R. L. North, L. M. Hyde, and C. M. Watts.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1903.	*Feet.*	*Sec.-ft.*	1903.	*Feet.*	*Sec.-ft.*	1903.	*Feet.*	*Sec.-ft.*
Jan. 12	1.10	1.8	Mar. 14	1.43	12.8	Apr. 30	1.59	32
25	1.10	1.9	15	1.43	13.1	May 2	1.56	28
27	1.20	3.3	16	1.43	12.8	3	1.55	27
28	3.55	457	17	1.42	11.6	4	1.55	28
29	1.70	50	18	1.41	11.3	5	1.54	27
30	1.50	22	19	1.40	11.1	6	1.51	20
31	1.48	17.9	20	1.40	10.9	7	1.50	19.6
Feb. 1	1.50	22	21	1.40	10.6	8	1.50	19.0
2	1.45	16	22	1.40	10.5	10	1.49	17.8
3	1.42	14.6	23	1.40	10.6	11	1.48	17.5
4	1.45	15.3	25	1.67	29	12	1.48	17.7
5	1.45	14.9	26	1.55	19.6	13	1.48	16.7
7	1.45	15.6	27	1.50	17.1	14	1.48	16.7
8	1.68	25	28	1.49	16.9	15	1.46	16.1
9	1.50	18.4	29	1.50	18.0	16	1.45	15.2
10	1.49	17.6	30	2.10	93	17	1.45	14.9
11	1.46	16.1	31	2.15	111	18	1.45	15.5
12	1.45	15.5	Apr. 1	3.50	535	19	1.45	15.2
13	1.44	14.9	2	2.60	242	20	1.45	14.4
14	1.44	14.7	3	2.20	137	21	1.45	13.5
16	1.40	10.8	4	2.10	114	22	1.45	13.6
17	1.40	11.3	5	1.90	73	23	1.45	13.4
18	1.40	11.1	6	1.85	57	25	1.43	12.2
19	1.40	11	7	1.80	53	26	1.42	11.9
20	1.39	10.8	8	1.70	44	27	1.40	11.4
21	1.39	11	9	1.65	43	28	1.40	11.2
23	1.38	10.1	10	1.65	38	29	1.40	10.7
24	1.37	9	11	1.62	38	30	1.40	10.4
25	1.37	9.1	12	1.60	34	June 1	1.38	8.7
26	1.36	8.6	14	1.56	30	2	1.38	8.5
27	1.35	8.7	15	1.55	29	3	1.37	7.8
28	1.35	8.3	16	2.50	175	4	1.35	7.1
Mar. 1	1.35	8.2	17	2.30	136	5	1.35	7.0
2	1.35	8	18	2.10	95	6	1.35	7.0
3	1.35	7.9	19	2.05	86	8	1.33	6.0
4	1.45	14.8	20	2.00	79	9	1.32	5.7
5	1.65	32	21	1.90	74	10	1.32	4.9
6	1.50	20	22	1.85	67	11	1.31	4.9
7	1.50	20	23	1.80	54	12	1.30	4.9
9	1.43	13.5	24	1.75	44	13	1.30	4.9
10	1.42	13.2	25	1.71	43	15	1.30	4.7
11	1.42	13.4	27	1.68	35	16	1.30	4.4
12	1.41	12.7	28	1.65	35	17	1.30	4.4
13	1.42	13.2	29	1.60	33	18	1.30	4.4

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Discharge measurements of Santa Ynez River near Santa Barbara, Calif., for 1903–1904, 1906, and 1911–1918—Continued.

Date.	Gage height.	Discharge.
1903.	*Feet.*	*Sec.-ft.*
June 20	1.28	3.1
July 12	1.20	1.2
Dec. 20	(a)	.30
21	(a)	.35
22	(a)	.35
23	(a)	.40
24	(a)	.40
25	(a)	.40
26	(a)	.40
27	(a)	.40
28	(a)	.40
29	(a)	.42
30	(a)	.42
31	(a)	.42
1904.		
Jan. 18	2.20	4.32
19	2.07	1.77
Feb. 5	2.28	3.44
6		3.27
7	2.15	2.35
8	2.15	2.27
9	2.10	2.17
10	2.08	1.74
16		6.89
17		4.49
18		2.74
19		2.53
20		2.11
27		45.00
28	3.00	96.00
29	2.32	16.20
Mar. 1		7.00
2		5.28
3		4.33
4		2.70
5		2.95
6		2.88
7		2.43
8		2.33
9		2.60
10		2.35
11	3.08	135.00
12	2.44	27.00
13	2.36	16.40
14	2.32	11.90
15	2.28	10.20
19	2.20	7.24
20	2.20	6.96
21	2.18	6.41
23	3.88	442.00
24	2.82	70.00
25	2.68	49.00
26	2.52	30.00
27	2.46	26.00
28	2.43	24.00
29	2.47	26.00

Date.	Gage height.	Discharge.
1904.	*Feet.*	*Sec.-ft.*
Mar. 30	2.45	25.00
31	2.42	23.00
Apr. 1	2.37	16.30
2	2.35	14.50
3	2.33	14.20
4	2.31	11.20
5	2.32	12.40
6	2.27	10.10
7	2.26	9.64
8	2.25	8.87
12	2.20	6.80
13	2.20	6.87
14	2.19	5.32
15	2.19	5.24
16	2.21	5.93
17	2.20	5.61
18	2.20	5.64
19	3.03	101.00
20	2.83	74.00
21	2.52	30.00
22	2.47	25.00
24	2.39	17.10
25	2.37	16.60
27	2.47	24.00
28	2.46	23.00
29	2.43	21.00
30	2.43	20.00
May 2	2.38	17.20
5	2.32	11.40
6	2.29	10.50
7	2.28	10.20
8	2.23	7.90
9	2.23	8.05
10	2.22	7.69
14	2.19	5.89
15	2.19	6.40
16	2.15	4.28
17	2.13	4.05
18	2.16	4.43
19	2.12	3.60
21	2.12	3.29
22	2.12	3.34
23	2.11	3.13
24	2.11	3.19
25	2.16	4.43
26	2.14	4.41
27	2.12	3.32
30	2.09	2.99
31	2.09	3.12
June 1	2.09	2.94
2	2.07	2.60
3	2.06	2.50
4	2.05	2.28
5	2.05	2.28
6	2.03	2.06
10	2.01	.94

Date.	Gage height.	Discharge.
1906.	*Feet.*	*Sec.-ft.*
Jan. 12	2.10	4.7
26	2.18	10.1
Feb. 7	2.21	10.1
10	2.40	37
11	2.61	63
15	2.94	144
16	2.53	59
24	2.30	24
Mar. 14	3.37	291
15	3.10	189
16b	5.30	2,440
16b	6.70	4,170
16b	7.65	5,440
16b	8.65	6,700
17b	4.30	970
17b	4.10	780
17b	4.30	968
17b	4.10	777
18b	3.74	544
18b	3.74	534
Apr. 17	2.80	131
June 1	2.50	65
29	2.21	22
July 9	2.10	8.5
27	1.95	2.0
Aug. 17	1.82	1.0
Sept. 24	1.82	.7
Dec. 27	3.90	468
1911.		
Mar. 27	6.50	514
31	6.20	361
Apr. 13	6.72	229
24	5.48	155
29	5.40	148
May 5	5.29	108
10	5.20	105
20	5.10	85
30	5.00	62
June 5	4.96	55
11	4.91	49
29	4.80	27
July 2	4.75	27
6	4.75	22
13	4.70	19
20	4.66	15
24	4.65	13
28	4.60	10
Aug. 3	4.56	8.3
11	4.60	8.5
21	4.55	5.0
29	4.52	5.0
31	4.50	4.9
Sept. 6c	4.50	4.9
6	4.50	4.7
20	4.50	4.7

a Weir measurement. b Measured by floats.

NOTE.—Measurements during 1911–12 were made about 2,000 feet above the gage. There is an inflow of 0.5 to 1.05 second-feet between the section and the gage. Beginning June 29, 1911, this inflow was closely estimated and added to the measured amount.

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Discharge measurements of Santa Ynez River near Santa Barbara, Calif., for 1903–1904, 1906, and 1911–1918—Continued.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1911.			
Oct. 2[a]	C. M. Watts	4.52	4.9
14[a]	do	4.53	5.4
21[a]	do	4.52	6.0
31[a]	do	4.66	8.3
Nov. 11[a]	do	4.68	8.9
20[a]	do	4.80	10
Dec. 1[a]	do	4.80	10
11[a]	do	4.85	13
21[a]	do	4.83	13
1912.			
Jan. 2[a]	C. M. Watts	4.83	13
11[a]	do	4.86	14
22[a]	do	4.85	11
31[a]	do	4.85	11
Feb. 19[a]	do	4.81	10
22[a]	F. C. Ebert	4.80	9.6
22[a]	C. M. Watts	4.80	9.3
23[a]	do	4.80	9.4
23[a]	F. C. Ebert	4.80	9.2
Mar. 3[b]	C. M. Watts	5.04	51
4[a]	do	5.00	28
5[c]	do	6.55	492
5[b]	do	5.39	105
6[c]	do	6.50	499
6[a]	do	6.02	304
12[c]	do	7.10	765
12[c]	do	7.50	993
24[b]	do	5.08	53
Apr. 12[b]	do	5.57	167
20[a]	do	5.18	83
May 1[a]	do	5.03	38
13[a]	do	4.95	29
24[a]	do	4.88	26
25[a]	do	5.15	82
June 4[a]	do	4.82	14
5[a]	do	4.80	12
5[a]	F. C. Ebert	4.80	10
6[a]	do	4.80	10
6[a]	C. M. Watts	4.80	12
14[d]	do	4.78	9.8
24	do	4.75	8.0
July 1[d]	do	4.70	4.8
10[d]	do	4.68	2.6
22[e]	do	4.65	1.4
Aug. 2[f]	do	4.64	1.0
12[f]	do	4.64	.7
22[f]	do	4.64	.5
Sept. 2[f]	do	4.61	.4
12[f]	do	4.62	.4
22[f]	do	4.62	.2
Oct. 2	do	4.62	.2
11	do	4.64	.3
21	do	4.63	.3
31	do	4.64	.3
Nov. 10	do	4.66	.6
17	do	4.66	.8
Dec. 29	B. H. Hodgson, jr.	4.70	.9
1913.			
Jan. 10	B. H. Hodgson, jr.	4.70	2.3
17	do	5.30	61
31	do	4.74	1.8
Feb. 10	do	4.99	39
20	do	4.81	14
24	do	9.40	2,000
24	do	9.10	1,600
26	do	6.52	480
27	do	5.99	254
28	do	5.78	159
Mar. 12	do	5.23	70
19	do	5.20	50
26	C. M. Watts	5.02	41
Apr. 1	F. C. Ebert	4.89	30
2	C. M. Watts	4.89	32
7	do	4.85	27
1913.		*Feet.*	*Sec.-ft.*
Apr. 10	C. M. Watts	4.82	28
14	do	4.81	26
21	do	4.82	28
26	do	4.77	20
May 1	do	4.75	18
7	do	4.71	16
15	do	4.70	14
19	do	4.67	10
25	do	4.65	8.3
31	do	4.64	7.8
June 5	do	5.10	44
10	do	4.67	9.7
16	do	4.63	5.4
27	do	4.60	4.4
July 2	do	4.53	2.2
9	do	4.45	1.3
14	do	4.41	1.1
19	do	4.40	.7
24	do	4.41	.8
29	do	4.42	1.0
Aug. 4	do	4.36	.5
11	do	4.35	.3
16	F. C. Ebert	4.30	.4
17	C. M. Watts	4.28	.4
25	do	4.23	.2
28	do	4.80	21
Sept. 6	do	4.31	.3
14	do	4.25	.1
24	do	4.25	.07
1914.			
Jan. 7	F. C. Ebert	4.80	13
7	W. M. Coffey	4.80	13
8	do	4.80	14
9	do	4.78	13
10	do	4.76	11
11	do	4.75	11
12	do	4.75	11
13	do	4.74	11
14	do	4.75	11
15	do	5.28	66
16	do	6.52	405
17	do	5.95	192
Feb. 7	do	5.90	238
8	do	5.78	246
9	do	5.71	220
9	do	5.71	223
10	do	5.66	218
11	do	5.61	203
12	F. C. Ebert	5.53	174
13	W. M. Coffey	5.49	169
17	do	5.33	135
Mar. 4	do	5.26	136
12	do	5.99	304
13	do	5.90	277
14	do	5.87	260
15	do	5.79	240
16	do	5.74	239
17	do	5.69	223
18	do	5.67	223
19	do	5.62	210
20	do	5.57	203
27	do	5.42	182
Apr. 11	do	5.13	108
21	do	5.02	89
28	do	4.94	71
May 4	do	4.85	58
12	do	4.74	49
17	do	4.72	48
26	do	4.66	42
June 3	do	4.57	33
16	do	4.45	22
24	do	4.41	18
30	do	4.34	13
July 7	do	4.31	11
18	do	4.27	9.9

[a] Wading 2,000 feet above gage.
[b] Wading 100 feet below gage.
[c] Cable.
[d] Wading 1,500 feet above gage; 60 feet above tunnel.
[e] Wading 2,500 feet above gage.
[f] In flume 2,500 feet above gage.

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Discharge measurements of Santa Ynez River near Santa Barbara, Calif., for 1903–1904, 1906, and 1911–1918—Continued.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1914.			
Aug. 3	W. M. Coffey	4.18	3.9
3	do	4.18	4.3
Oct. 6	do	4.10	1.8
6	do	4.10	2.2
6	do	4.10	2.0
7	do	4.10	1.9
Nov. 7	do	4.14	2.9
8	do	4.14	2.7
13	do	4.15	2.7
Dec. 21	F. E. Thompson	4.46	24
22	do	4.44	19
23	do	4.41	18
24	do	4.40	16
25	do	4.38	16
26	do	4.37	16
27	do	4.37	15
28	do	4.35	14
29	do	4.35	14
30	do	4.33	13
31	do	4.33	13
1915.			
Jan. 1	F. E. Thompson	4.32	13
2	do	4.32	13
3	do	4.32	13
4	do	4.32	13
5	do	4.32	13
6	do	4.32	12
7	do	4.32	12
8	do	4.32	12
9	do	4.38	16
10	do	4.35	14
11	do	4.33	14
12	do	4.33	13
13	do	4.32	13
14	do	4.32	12
15	do	4.32	12
16	do	4.32	12
17	do	4.32	12
18	do	4.31	12
19	F. C. Ebert	4.30	10
19	F. E. Thompson	4.30	10
20	do	4.30	11
21	do	4.30	10
22	do	4.30	11
23	do	4.30	10
24	do	4.30	10
25	do	4.35	12
26	do	4.35	13
27	do	4.36	13
28	do	4.50	24
31	do	5.73	202
Feb. 1	do	5.50	190
5	do	5.40	171
6	do	5.34	129
7	do	5.18	120
8	do	4.96	99
16	do	5.66	334
17	do	6.05	503
18	do	5.88	428
19	do	5.64	356
20	do	5.64	341
21	do	5.64	350
22	do	5.56	294
23	do	5.42	276
24	do	5.64	350
25	do	5.70	373
26	do	5.58	325
27	do	5.49	309
28	do	5.42	288
Mar. 1	do	5.50	309
2	R. B. Whitman	5.45	282
3	do	5.39	283
4	do	5.32	262
5	do	5.30	237
6	do	5.28	229
7	do	5.24	210
8	do	5.21	218
9	do	5.19	203
1915.			
Mar. 10	R. B. Whitman	5.15	185
11	do	5.10	183
12	do	5.10	178
13	do	5.08	164
14	do	5.06	159
15	do	5.03	152
16	do	5.01	145
17	do	5.00	130
18	do	4.99	123
19	do	4.98	120
20	do	4.97	117
21	do	4.95	111
22	do	4.94	112
23	do	4.93	106
27	do	4.89	97
28	do	5.22	170
29	do	5.17	187
30	do	5.00	133
31	do	4.98	117
Apr. 21	E. Pyzel	4.68	64
1916.			
Jan. 8	F. C. Ebert	4.30	49
25	Volk and Packard	5.60	435
30	K. Q. Volk	6.45	660
Mar. 14	Rowe and Hopkins	4.70	176
Apr. 26	Bowen and Hopkins	4.00	45
May 17	B. H. Hopkins	3.78	21
22	do	3.75	27
27	do	3.73	24
June 15	do	3.54	9.8
23	Ebert and Hopkins	3.50	7.6
28	Gilchrest and Hopkins	3.47	7.3
28	Elmer Gilchrest	3.47	6.8
July 1	do	3.04	5.1
4	do	3.45	5.4
6	do	3.41	3.8
10	do	3.50	3.3
12	do	3.35	3.3
15	do	3.35	2.2
18	do	3.20	2.1
21	do	3.10	1.8
24	do	3.05	1.8
Aug. 3	Gilchrest and Ebert	2.05	1.5
10	Elmer Gilchrest	2.28	1.5
Sept. 11	do	1.84	.2
Oct. 2	do	2.48	18
4	do	2.34	4.9
11	do	2.44	14
13	do	2.38	6.2
17	do	2.37	5.0
Nov. 28	Ebert and Gilchrest	2.68	7.4
Dec. 4	Elmer Gilchrest	2.66	26
17	do	2.46	9.0
30	do	2.70	62
1917.			
Jan. 2	Elmer Gilchrest	2.82	122
5	do	2.85	137
5	F. C. Ebert	2.84	119
9	Elmer Gilchrest	2.66	74
13	O. Packard	.....	215
23	do	2.74	107
27	do	2.68	86
Feb. 3	do	2.60	59
7	F. C. Ebert	2.58	49
22	Elmer Gilchrest	4.27	1,320
25	do	5.11	2,500
28	F. C. Ebert	3.36	393
Mar. 1	do	3.28	355
5	Gilchrest and Trace	2.98	198
8	Elmer Gilchrest	2.90	177
14	do	2.80	114
16	do	2.75	92
22	do	2.66	82
23	do	2.70	109
Apr. 4	do	2.62	62
7	do	2.60	50
10	do	2.60	52
13	do	2.58	47

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Discharge measurements of Santa Ynez River near Santa Barbara, Calif., for 1903–1904, 1906, and 1911–1918—Continued.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
Apr. 16	Elmer Gilchrest	2.61	51	May 31	F. S. Pinkham	2.00	41
25	do	2.55	33	June 3	do	1.94	30
28	do	2.55	34	5	do	1.90	28
May 3	do	2.53	31	7	do	1.88	26
7	do	2.50	27	10	do	1.84	24
11	do	2.50	27	12	do	2.68	21
17	do	2.44	21	14	do	2.66	18
21	do	2.46	21	17	do	2.68	21
26	do	2.48	21	19	do	2.64	20
29	do	2.44	19	21	do	2.64	18
June 5	do	2.40	15	24	do	2.62	16
9	do	2.38	11	26	do	2.60	13
13	do	2.38	9.9	29	do	2.60	12
15	do	2.36	8.2	July 1	do	2.62	13
20	do	2.80	3.7	3	do	2.48	11
23	do	2.85	3.7	5	do	2.47	10
27	F. C. Ebert	.....	2.6	8	do	2.43	6.4
July 14	Elmer Gilchrest	2.64	1.5	10	do	2.42	5.6
				12	do	2.42	5.0
1918.				15	do	2.40	4.3
Jan. 19	Elmer Gilchrest	1.98	1.0	17	do	2.38	4.3
26	do	2.32	2.7	19	do	2.38	4.0
29	do	2.16	1.4	22	P. Romero	2.35	3.9
Feb. 9	do	2.18	1.8	24	do	2.34	3.5
12	do	2.10	1.9	26	do	2.34	3.8
18	do	2.46	6.2	29	do	2.31	3.5
Mar. 11	Haskell and Browning	5.15	1,730	31	F. C. Ebert	2.32	2.9
21	Haskell and Gilchrest	4.45	1,070	31	P. Romero	2.33	3.5
Apr. 3	F. S. Pinkham	3.27	271	Aug. 1	do	2.31	2.8
5	do	3.16	222	5	do	2.30	2.5
10	F. C. Ebert	3.04	175	7	do	2.30	2.5
12	F. S. Pinkham	2.98	175	9	do	2.30	2.3
15	do	2.92	147	12	do	2.29	3.0
17	do	2.88	132	14	do	2.30	2.9
19	do	2.85	124	16	C. Codero	2.32	4.3
22	do	2.80	110	19	do	2.33	3.5
24	do	2.78	100	21	do	2.31	3.3
26	do	2.76	96	23	do	2.31	3.9
29	do	2.74	89	26	do	2.28	2.9
May 1	do	2.71	78	28	do	2.26	2.6
3	do	2.69	72	30	F. Carrillio	2.26	2.3
6	do	2.68	66	Sept. 2	do	2.26	2.8
8	do	2.68	66	4	do	2.27	3.1
10	do	2.66	65	6	do	2.26	2.3
13	do	2.62	55	9	do	2.26	3.0
15	do	2.61	54	11	do	2.26	3.4
17	do	2.60	51	13	do	2.32	3.3
20	do	2.59	47	16	do	2.32	3.4
22	do	2.59	44	18	do	2.30	3.5
24	F. C. Ebert	2.57	44	20	do	2.28	3.2
27	F. S. Pinkham	2.57	44	23	do	2.28	3.3
29	do	2.58	48	25	do	2.28	3.0

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1903–1918.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Date.	Jan.	Feb.	Mar.	Apr.	May.	June.
1903.[a]							1903.						
1	2	22	8	535	31	8.7	16	2	11	13	175	15	4.4
2	2	16	8	242	28	8.5	17	2	11	12	136	15	4.4
3	2	15	8	137	28	7.8	18	2	11	11	95	15.5	4.4
4	2	15	15	114	28	7.1	19	2	11	11	86	15.2	4.0
5	2	15	32	73	27	7.0	20	2	11	11	79	14.4	3.1
6	2	15	20	57	20	7.0	21	2	11	11	74	13.5	.....
7	2	16	20	53	20	6.0	22	2	11	10	67	13.6	.....
8	2	25	17	44	19	6.0	23	2	10	11	54	13.4	.....
9	2	18	14	43	19	5.7	24	2	9	16	44	13.0	.....
10	2	18	13	38	18	4.9	25	2	9	29	43	12.2	.....
11	2	16	13	38	18	4.9	26	3	9	20	40	11.9	.....
12	2	16	13	34	18	4.9	27	3	9	17	35	11.4	.....
13	2	15	13	34	17	4.9	28	457	8	17	35	11.2	.....
14	2	15	13	30	17	5.0	29	50	.....	18	33	10.7	.....
15	2	13	13	29	16	4.7	30	22	.....	93	32	10.4	.....
							31	18	.....	111	.....	9.0	.....

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904.									
1	.....	0.6	6.9	15.5	18.5	2.6	0.1	.....	.....
2	.....	.6	3.8	14.1	17	2.3	.1	.....	.....
3	.....	.6	3.5	12.8	13.5	1.8	.1	.....	.....
4	.....	.6	2.6	12.2	14.1	1.6	.1	.....	.....
5	.....	10.5	2.6	12.2	12.8	1.6	.1	.....	.....
6	.....	9.9	2.6	9.9	11.9	1.1	.1	.....	.....
7	0.5	4.5	2.3	9.4	9.9	.9	.1	.....	.....
8	.5	4.5	2.3	8.8	8.3	.9	.05	.....	.....
9	.5	2.8	2.6	8.8	7.8	.9	.05	.....	.....
10	.5	2.3	50	7.8	7.4	.6	.05	.....	.....
11	.5	.8	50	6.9	6.9	.4	.05	.....	.....
12	.5	.8	22	6.4	6.4	.4	.05	.....	.....
13	.5	1.0	15.5	6.4	6.4	.5	.05	.....	.....
14	.5	.9	11.6	6.4	6.0	.5	.05	.....	.....
15	.5	.9	10.5	6.0	6.4	.4	.....	.....	.....
16	.5	18.5	9.4	6.4	4.9	.4	.....	.....	.....
17	.8	12.8	7.8	6.4	3.8	.4	.....	.....	.....
18	6.4	8.3	6.9	6.4	4.5	.4	.....	.....	.....
19	2.1	7.4	6.4	121	3.5	.4	.....	.....	.....
20	.8	6.9	6.4	61	3.8	.4	.....	.....	.....
21	.7	1.6	5.6	34	3.5	.5	.....	.....	.....
22	.8	1.0	5.6	25	3.5	.5	.....	.....	.....
23	.7	.9	445	22	3.5	.4	.....	.....	.....
24	.8	1.0	70	17.7	3.1	.4	.....	.....	103
25	.6	1.0	45	16.2	4.5	.4	.....	.....	5,450
26	.7	.9	30	18.5	4.2	.3	.....	.....	103
27	.6	131	23	25	3.5	.1	.....	.....	38
28	.6	103	22	20	2.8	.1	.....	.....	28
29	.6	11.6	25	24	2.8	.1	.....	.....	23
30	.6	.....	22	21	2.6	.1	.....	.....	18
31	.6	.....	18.5	.....	2.6	.....	.....	.....	.....

[a] January 1 to June 20, 1903, station was maintained above junction with Mono Creek.

NOTE.—Stream dry Nov. 3 to Dec. 20, 1903, and July 15 to Sept. 23, 1904.

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904-5.												
1	16.4	5.7	6.4	11.6	28	184	242	70	30	4	3	2
2	13	6.0	6.4	11.6	306	168	242	79	30	4	3	2
3	11.6	6.0	6.9	9	6,550	153	220	70	30	4	3	1.5
4	10	6.0	6.9	9	4,230	153	202	60	30	4	3	1.5
5	9.5	6.0	6.9	9	710	168	202	60	30	4	3	1.5
6	10	6.0	6.4	9	635	184	184	60	30	4	3	1.5
7	15.7	6.0	6.9	6.4	530	153	184	60	30	4	3	1.5
8	17.1	6.0	6.4	401	495	125	168	60	30	4	3	1.5
9	14.4	6.0	6.9	353	462	125	168	60	24	4	3	1.5
10	13	6.0	6.9	38	462	112	168	60	24	4	3	1.5
11	11.1	6.0	6.9	33	430	125	153	60	24	4	3	1.5
12	9.5	6.0	6.9	28	430	1,395	168	60	19	4	3	1.5
13	9.5	6.0	6.9	23	430	7,275	153	52	19	4	3	1.5
14	8.5	6.4	6.4	18.5	400	2,580	139	52	14	4	3	1.5
15	7.4	6.4	6.4	23	315	1,340	139	52	14	4	3	1.5
16	6.9	6.4	6.4	28	1,120	2,120	125	52	10	4	2.5	1.5
17	6.4	6.4	6.9	23	3,868	1,340	125	52	10	4	2.5	1.5
18	6.4	6.4	6.9	18.5	710	1,065	125	44	10	4	2.5	1.5
19	6.4	6.4	6.9	18.5	530	832	112	44	7.5	4	2.5	1.5
20	6.4	7.4	6.9	18.5	495	710	112	44	7.5	4	2.5	1.5
21	6.0	7.4	6.9	635	462	565	112	44	7.5	4	2.5	1.5
22	6.0	6.9	6.9	140	370	530	100	44	5	4	2.5	1.5
23	5.7	6.9	6.9	82	315	462	100	44	5	4	2.5	1
24	5.7	6.9	6.9	65	265	430	100	44	5	4	2	1
25	5.7	6.9	6.9	58	220	400	90	37	5	4	2	1
26	5.7	6.9	6.9	44	202	370	90	37	5	3	2	1
27	5.7	6.9	6.9	44	184	315	112	37	5	3	2	1
28	5.7	6.9	6.9	38	184	315	90	37	5	3	2	1
29	5.7	6.4	6.9	38	.....	430	79	37	5	3	2	1
30	5.7	6.4	6.9	28	.....	315	79	37	5	3	2	1
31	5.7	.....	13	28	.....	265	.....	37	.....	3	2	.....
1905-6.												
1	1	1	4	3	9	17	430	57	49	12	2.5	1
2	1	1	4	3	6	17	400	49	49	12	2.5	1
3	1	1	4	4.5	6	17	370	49	42	12	2.0	1
4	1	1	4	4.5	6	104	315	49	42	9	2.0	1
5	1	1	4	4.5	6	49	265	49	35	9	2.0	1
6	1	1.5	4	4.5	12	35	265	42	35	9	2.0	1
7	1	1.5	4	4.5	12	28	223	42	35	6	2.0	1
8	1	1.5	4	4.5	12	22	186	42	28	6	2.0	1
9	1	1.5	4	4.5	9	22	186	42	28	6	2.0	1
10	1	1.5	4	4.5	22	22	171	42	28	6	1.5	1
11	1	1.5	4	4.5	65	22	171	35	22	6	1.5	1
12	1	2	4	6	35	3,650	156	35	22	6	1.5	1
13	1	2	4	9	12	3,070	156	35	22	6	1.0	
14	1	2	4	17	35	495	129	35	22	6	1.5	1
15	1	2	4	17	171	71	104	35	22	6	1.5	1
16	1	2	4	17	49	4,810	104	35	22	6	1.0	1
17	1	2	4	17	35	875	104	35	17	6	1.0	1
18	1	2	4	17	28	462	94	28	17	6	1.0	1
19	1	2	4	104	22	290	94	28	17	6	1.0	1
20	1	2	4	49	22	204	83	28	17	4.5	1.0	1
21	1	2	4	28	35	186	83	28	17	4.5	1.0	1
22	1	2	4	22	35	156	83	28	17	4.5	1.0	1
23	1	2	4	22	22	600	83	28	17	3	1.0	1
24	1	2	4	17	22	3,940	83	28	17	3	1.0	1
25	1	2	4	17	22	4,158	74	28	17	3	1.0	1
26	1	3	4	12	22	4,665	74	49	12	3	1.0	1
27	1	5	4	9	17	1,630	65	204	12	3	1.0	1
28	1	5	4	9	17	1,065	65	635	12	2.5	1.0	1
29	1	5	4	9	.....	710	65	129	12	2.5	1.0	1
30	1	4	4	9	.....	565	65	83	12	2.5	1.0	1
31	1	.....	4	9.0	.....	495	.....	57	.....	2.5	1.0	.....

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	1	1	2	49	430	129	670	.....	.....	.....	.....	.....
2	1	1	2	49	400	116	600	.....	.....	.....	.....	.....
3	1	1	2	49	710	104	565	.....	.....	.....	.....	.....
4	1	1	2	49	920	8,145	462	.....	.....	.....	.....	.....
5	1	1	2	49	875	5,970	430	.....	.....	.....	.....	.....
6	1	1	2	83	875	4,520	370	.....	.....	.....	.....	.....
7	1	1.5	2	430	830	1,990	430	.....	.....	.....	.....	.....
8	1	1.5	2	7,855	790	790	315	.....	.....	.....	.....	.....
9	1	1.5	2.5	9,450	670	750	290	.....	.....	.....	.....	.....
10	1	1.5	6	4,520	635	710	265	.....	.....	.....	.....	.....
11	1	1.5	17	2,790	600	710	265	.....	.....	.....	.....	.....
12	1	1.5	600	1,750	565	530	244	.....	.....	.....	.....	.....
13	1	1.5	49	1,175	530	495	204	.....	.....	.....	.....	.....
14	1	1.5	35	790	495	460	186	.....	.....	.....	.....	.....
15	1	1.5	22	970	530	460	171	.....	.....	.....	.....	.....
16	1	1.5	12	875	565	430	156	.....	.....	.....	.....	.....
17	1	1.5	12	2,055	565	400	142	.....	.....	.....	.....	.....
18	1	1.5	9	970	400	370	142	.....	.....	.....	.....	.....
19	1	1.5	6	970	223	5,172	142	.....	.....	.....	.....	.....
20	1	1.5	6	970	142	3,505	129	.....	.....	.....	.....	.....
21	1	1.5	6	970	142	2,860	129	.....	.....	.....	.....	.....
22	1	1.5	4.5	970	495	2,380	116	.....	.....	.....	.....	.....
23	1	1.5	4.5	970	370	2,120	104	.....	.....	.....	.....	.....
24	1	1.5	4.5	970	265	1,750	104	.....	.....	.....	.....	.....
25	1	1.5	4.5	970	223	4,520	93	.....	.....	.....	.....	.....
26	1	1.5	65	970	186	2,315	83	.....	.....	.....	.....	.....
27	1	1.5	290	970	142	1,395	83	.....	.....	.....	.....	.....
28	1	1.5	104	875	142	1,285	74	.....	.....	.....	.....	.....
29	1	2.5	94	790	.....	1,065	74	.....	.....	.....	.....	.....
30	1	2	94	710	.....	970	65	.....	.....	.....	.....	.....
31	1	.....	156	400	.....	875	.....	.....	.....	.....	.....	.....

Day.	Oct.	Nov.	Dec.	Jan.	Day.	Oct.	Nov.	Dec.	Jan.
1907–8.					1907–8.				
1	1	4	2	2.5	16	1	2.5	7	7
2	1	4	2	2.5	17	1	2.5	6	6
3	1	3	2	2.5	18	1	2.5	6	6
4	1	3	2	2.5	19	1	2.5	6	5
5	1	3	2	2.5	20	1	2.5	6	5
6	1	3	2	2.5	21	1	2.5	5	5
7	1	3	2	2.5	22	1	2.5	5	5
8	1	3	2	2.5	23	2	2.5	5	4
9	1	3	22	2.5	24	3	2.5	5	4
10	1	3	15	2.5	25	3	2.5	4.5	3,650
11	1	3	9	2.5	26	22	2	4.5	1,750
12	1	3	9	2.5	27	315	2	4.5	1,750
13	1	3	9	2.5	28	35	2	3	710
14	1	3	8	10	29	25	2	3	156
15	1	3	8	7	30	12	2	3	100
					31	8	.....	3	67

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911.								1911.							
1	.....	377	137	62	27	8	a 4	16	1,230	209	90	44	15	7	4
2	.....	366	a 132	a 61	26	7	a 4	17	1,160	201	88	43	a 15	7	4
3	.....	360	126	60	a 25	7	4	18	1,120	192	84	42	15	7	a 4
4	.....	a 350	123	59	a 25	a 7	4	19	1,050	187	82	38	14	7	4
5	.....	339	119	56	24	a 8	4	20	966	177	80	37	14	6	4
6	.....	329	115	56	24	8	4	21	980	172	78	37	14	6	4
7	.....	309	110	54	22	8	4	22	780	169	73	36	14	6	4
8	.....	283	110	52	21	8	4	23	655	166	73	36	14	6	4
9	.....	271	104	51	21	8	4	24	600	164	69	36	14	6	4
10	.....	258	100	49	21	8	4	25	560	159	69	34	13	5	4
11	.....	249	100	48	19	9	4	26	515	154	69	32	11	6	4
12	.....	243	98	a 46	19	9	4	27	500	156	67	32	10	6	4
13	.....	229	98	44	18	8	4	28	471	146	64	32	9	5	4
14	.....	223	94	43	18	8	4	29	439	144	64	31	9	5	4
15	1,350	215	92	43	17	8	4	30	409	139	62	28	8	4	5
								31	384	.....	62	.....	8	4	.....

a Gage not read; discharge interpolated.

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	5	8	12	13	15	10	45	39	16	4.4	1.0	0.4
2	5	8	12	13	15	10	43	38	15	4.4	1.0	.4
3	5	[a] 8	12	13	[a] 15	34	41	38	14	[a] 4.4	1.0	.4
4	5	8	[a] 12	13	15	31	38	38	14	[a] 4.4	.9	.4
5	5	8	13	13	14	272	34	36	12	4.4	.9	.4
6	6	8	18	14	13	380	34	21	12	4.4	.9	.4
7	6	8	14	14	13	106	34	21	[a] 12	4.4	.8	.4
8	6	8	14	14	13	95	31	34	[a] 12	3.8	.8	.4
9	[a] 6	8	14	14	13	106	31	[a] 34	12	3.8	[a] .8	.4
10	[a] 6	8	14	14	12	225	[a] 113	34	12	3.8	[a] .7	.4
11	6	9	14	16	12	109	195	34	10	3.2	.7	.4
12	6	10	13	16	12	588	158	34	10	3.2	.7	.4
13	6	11	13	16	12	290	118	28	10	2.6	.7	.4
14	6	11	13	16	12	195	100	28	10	2.6	.7	.4
15	6	12	13	[a] 16	12	142	82	25	9.2	2.6	.7	.4
16	6	12	13	16	12	113	88	22	8.5	2.0	.6	[a] .3
17	6	12	13	16	12	95	77	22	7.8	[a] 1.9	.6	[a] .3
18	5	12	13	15	11	74	77	21	7.8	[a] 1.8	.6	[a] .3
19	5	12	13	15	11	[a] 74	77	21	7.8	[a] 1.7	.5	.2
20	5	12	13	15	11	73	67	21	6.4	[a] 1.6	.5	.2
21	5	12	13	15	11	58	62	21	5.7	1.5	.5	.2
22	5	[a] 12	13	15	10	58	56	21	5.7	1.5	.5	.2
23	[a] 5	12	13	15	10	52	52	21	7.8	1.5	.5	.2
24	5	12	13	15	10	48	50	19	7.8	1.5	.5	.2
25	5	12	[a] 13	15	10	48	47	38	7.1	1.5	.5	.2
26	6	12	[a] 13	16	10	56	45	38	5.7	1.5	.5	.2
27	7	12	13	19	10	80	45	34	5.7	1.5	.5	.2
28	7	12	13	16	10	58	45	21	5.0	1.5	.4	.2
29	8	12	14	15	10	54	43	17	5.0	1.5	.4	.2
30	8	12	13	15	.....	52	43	16	5.0	1.0	.4	.2
31	8	.....	13	15	.....	48	.....	16	.....	1.0	.4	.....

NOTE.—Daily discharge determined from the fairly well defined rating curves applicable as follows: Mar. 15 to Dec. 31, 1911, Jan. 1 to Apr. 30, 1912, and May 1 to Aug. 1, 1912. Discharge interpolated between measurements Aug. 2 to Sept. 30, 1912. Discharge interpolated on days for which there is no gage-height record.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	.2	.4	[b] .6	1.0	1.4	152	31	18	7.5	3.0	.8	1.0
2	.2	.4	[b] .6	1.0	1.4	126	31	18	7.0	2.6	.6	.7
3	.2	.4	[b] .6	.9	1.4	102	30	18	7.0	2.4	.6	.7
4	.2	[b] .4	[b] .7	.9	1.4	102	29	18	7.0	[b] 2.2	.5	.6
5	.3	[b] .4	[b] .7	1.0	1.4	114	28	17	44	[b] 2.0	.5	.4
6	.3	.5	[b] .7	.9	1.4	114	28	17	17	[b] 1.8	.5	.4
7	[b] .3	.5	[b] .7	.7	11	109	28	15	10	1.6	.4	.4
8	[b] .3	.5	[b] .7	.5	290	102	28	15	8.2	1.3	.4	.3
9	.3	.5	[b] .7	1.0	82	82	28	15	8.2	1.3	.4	.3
10	.4	.6	[b] .7	1.0	50	[b] 80	28	15	8.2	1.0	[b] .4	[b] .3
11	.4	.6	[b] .7	1.0	36	[b] 78	27	15	8.2	.9	.4	.3
12	.4	.6	[b] .8	1.0	24	76	27	14	7.6	.9	.4	.3
13	.4	.6	[b] .8	1.0	24	53	26	14	7.0	.8	.4	.3
14	.4	.6	[b] .8	[b] 1.0	22	53	26	14	6.5	.9	.4	.1
15	.4	.6	[b] .8	[b] 30	22	210	26	14	[b] 6.2	1.0	.3	.1
16	.4	.6	[b] .8	[b] 80	21	102	26	13	6.0	1.0	.3	.1
17	.3	.6	[b] .8	62	20	66	26	12	6.0	.9	.3	.1
18	.3	.6	[b] .8	[b] 20	17	102	32	[b] 11	6.0	.8	.3	.1
19	.3	.6	[b] .8	[b] 10	15	66	32	10	5.5	.8	.3	.1
20	.3	.6	[b] .8	[b] 6	15	66	[b] 30	10	4.5	.8	.3	.1
21	.3	.6	[b] .8	44	16	42	28	10	4.5	1.1	.3	[b] .1
22	.3	[b] .6	[b] .9	4	24	42	27	9.5	4.5	.9	.3	.1
23	.3	[b] .6	[b] .9	4	24	42	23	9.0	3.9	.9	.3	.1
24	.3	.6	[b] .9	4	1,780	42	22	8.5	3.6	.9	[b] .2	.1
25	.3	.6	[b] .9	3.5	930	[b] 43	20	8.3	3.0	.9	.2	.1
26	.3	[b] .6	[b] .9	3.1	455	44	20	8.3	3.0	.9	.2	.1
27	.4	[b] .6	[b] .9	2.4	310	43	20	8.3	4.5	[b] .9	.2	.1
28	.4	[b] .6	[b] .9	2.4	210	42	19	8.3	4.5	.9	23	.1
29	.4	[b] .6	1.0	1.8	.....	42	19	8.0	3.9	1.0	4.0	.1
30	.4	[b] .6	1.0	1.8	.....	32	19	8.0	3.6	1.0	3.4	.1
31	.4	.....	1.0	1.8	.....	30	.....	7.8	.....	1.0	2.5	.....

[a] Gage not read; discharge interpolated.
[b] Gage not read; discharge interpolated except for Jan. 14–16 and 18–20.

NOTE.—Daily discharge determined as follows: Oct. 1, 1912, to Feb. 8, Feb. 9 to 24, Feb. 25 to Apr. 7, Apr. 27 to May 15, June 5 to Aug. 27, and Aug. 28 to Sept. 13, from fairly well defined rating curves. Apr. 8 to 26 and May 16 to June 4, by indirect method for shifting control: Jan. 14 to 16 and 18 to 20, during which intervals a rise occurred, by comparison with records of Ventura River near Nordhoff.

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	0.1	0.1	3	31	490	650	147	71	34	14	5	2
2	.1	.1	3	22	431	610	135	76	33	13	5	2
3	.1	.1	3	19	375	570	127	67	33	13	5	2
4	.1	.1	3	16	340	530	126	64	33	12	5	2
5	.1	.1	3	16	324	490	131	62	32	12	5	2
6	.1	.1	3	15	279	450	120	57	31	12	5	2
7	.1	.1	3	15	261	412	116	57	32	11	5	2
8	.1	.1	3	14	330	375	114	55	32	11	4	2.5
9	.1	.1	3	13	330	357	111	55	31	11	4	2
10	.1	.1	3	12	217	340	111	53	28	11	4	2
11	.1	.1	3	11	204	340	104	52	26	11	4	2
12	.1	.1	3	11	188	302	98	50	26	11	4	2
13	.1	345	3	10	176	285	96	50	24	11	3.5	2.5
14	.1	45	3	10	176	271	94	50	23	11	4.5	2
15	.1	8	3	60	157	250	93	50	22	11	3.5	2
16	.1	4	3	322	155	243	88	48	22	10	3.5	2
17	.1	2	3	165	139	227	87	48	22	10	3	2
18	.1	8	3	2,850	2,360	222	84	47	22	10	3	2
19	.1	78	4	770	1,060	207	81	46	22	8.5	3	2
20	.1	9	4	590	8,350	195	78	44	21	9	2.5	2
21	.1	5	4	450	4,750	190	87	42	20	8	3	2
22	.1	5	11	390	1,600	178	93	41	20	7.5	2.5	2
23	.1	4	17	370	1,600	173	84	40	20	7.5	2.5	2
24	.1	4	11	680	1,160	166	84	41	19	7.5	2.5	2
25	.1	4	14	8,500	1,020	160	81	42	18	6.5	2.5	2
26	.1	4	8	3,030	915	155	78	42	17	6	2.5	2
27	.1	4	7	2,360	780	157	76	39	17	6	2.5	2
28	.1	4	6	1,660	690	151	76	38	15	5.5	2	2
29	.1	4	6	1,120	.....	200	73	37	14	6	2	2
30	.1	3	53	630	.....	178	71	36	14	6	2	2
31	.1	.....	47	550	.....	157	.....	36	.....	6	2	.....

NOTE.—Discharge determined from two fairly well defined rating curves.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1914–15.							1914–15.						
1	2	3	15	13	190	309	16	2	2.5	12	12	320	145
2	2	3	9.5	13	1,560	282	17	2	2.5	46	12	570	130
3	2	3	7.5	13	520	283	18	2.5	2.5	28	12	428	123
4	2	3	9	13	325	262	19	2.5	2.5	28	10	356	120
5	2	3	9	13	171	287	20	2.5	2.5	26	11	341	117
6	2	3	9.5	12	129	229	21	2.5	2.5	24	10	350	117
7		3	9	12	114	210	22	2.5	2.5	19	11	294	112
8	2	2.5	8	12	113	218	23	2.5	2.5	18	10	276	106
9	2	2.5	8.5	16	2,360	203	24	2.5	2.5	16	10	360	104
10	2.5	2.5	14	14	1,130	185	25	2.5	2.5	16	12	373	102
11	2	2.5	28	14	900	183	26	2.5	2.5	16	13	325	100
12	2	2.5	35	13	710	178	27	2.5	2.5	15	13	309	97
13	2	2.5	31	13	570	164	28	2.5	4	14	36	305	190
14	2	2.5	16	12	455	159	29	2.5	3	14	1,020	.....	187
15	2	2.5	14	12	370	152	30	3	2.5	13	395	.....	133
							31	3	.....	13	207	.....	117

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1					380	340			22	6.2	1.7	0.6
2					350				22	6.2	1.8	.9
3					325	310			21	6.2	1.4	.1
4				600	325	300			20	6.2	1.4	.1
5					325				18	5.8	1.5	.3
6				210		255			17	5.8	1.5	.05
7									16	4.2	1.4	.1
8				49					15	4.2	1.1	.3
9					295	200			14	3.9	1.3	.00
10									12	2.4	1.3	.05
11					285	187			11	2.4	1.2	.2
12									11	2.3	.9	.1
13						176			10	2.3	.8	.05
14					230	176			10	2.1	.7	.2
15						164			9.9	2.1	.9	.00
16					205				9.9	2.1	1.5	.00
17						153		21	9.9	2.1	1.6	.05
18				2,780	195			22	9.3	2.1	1.6	.00
19								29	8.8	2.0	1.6	.2
20								28	8.3	2.0	1.6	.05
21					195	215		28	7.8	1.9	.4	.05
22					176	183		26	7.8	1.9	.8	.00
23				410	153			26	7.8	1.8	.2	.1
24			49	395		155		26	7.8	1.8	1.0	.00
25				395	132			26	7.4	1.6	1.5	.00
26				1,280			45	26	7.0	1.6	.7	.05
27				2,940		130		24	6.6	1.6	.6	.5
28			10	1,120				24	6.6	1.6	.4	.1
29				1,070	325	116		24	6.6	1.6	.2	.1
30			31	665				24	6.2	1.6	.1	1.9
31			10	520		110		22		1.6	.1	
1916–17.												
1	5		15	147	65	329	64	32	15	1.9	.9	.4
2	18		60	122	62	278	62	32	15	1.9	.8	.4
3	12		30	215	62	240	59	32	15	1.8	.8	.3
4	5		26	173	57	225	56	32	15	1.8	.7	.3
5	7		15	126	53	200	56	29	15	1.8	.7	.3
6	6		10	107	49	186	56	27	14	1.7	.7	.3
7	5		10	93	45	173	50	27	13	1.7	.6	.3
8	5		10	76	43	160	50	27	12	1.7	.5	.3
9	10		10	74	43	164	50	27	11	1.6	.5	.3
10	25		10	71	43	147	48	27	11	1.6	.5	.3
11	14		9	71	43	134	45	27	10	1.6	.5	.3
12	10		9	95	43	126	45	26	10	1.5	.5	.3
13	6		9	215	43	118	43	24	10	1.5	.5	.3
14	6		9	96	41	114	43	23	9	1.5	.6	.3
15	6		9	83	41	107	45	20	8	1.4	.5	.2
16	5		9	77	38	100	50	18	7	1.3	.5	.2
17	5		9	62	38	93	45	18	6	1.2	.5	.2
18	5		9	77	38	93	45	21	5	1.1	.5	.2
19	4		9	194	45	93	45	21	4.0	1.1	.5	.2
20	4		9	198	486	93	45	21	3.7	.9	.5	.2
21	4		9	149	981	90	41	21	3.7	1.1	.6	.2
22	4		9	128	1,720	87	41	18	3.7	1.0	.5	.2
23	4		30	110	524	84	38	21	3.7	1.0	.5	.2
24	4		2,500	99	472	81	38	23	3.4	1.0	.5	.2
25	4		375	92	1,730	78	38	23	3.1	1.0	.5	.2
26	3		150	86	712	75	36	24	2.8	.9	.5	.2
27	3		104	86	486	72	38	20	2.6	.9	.5	.2
28	3	7.5	93	80	398	70	38	21	2.4	1.0	.5	.2
29	3		100	77		70	36	18	2.2	1.0	.4	.2
30	3		76	74		67	34	17	2.0	1.0	.4	.2
31	3		73	68		67		16		.8	.4	

NOTE.—Water-stage recorder not in operation Dec. 25-26 and Mar. 21-27; discharge interpolated.

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Daily discharge, in second-feet, of Santa Ynez River near Santa Barbara, Calif., for 1904–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1918.												
1					17	201	310	80	36	12	3.5	2.6
2					17	190	295	74	33	11	3.0	2.8
3					18	173	277	72	30	11	2.8	3.0
4					16	166	257	72	29	11	2.5	3.1
5					16	187	234	66	28	10	2.5	2.7
6					19	455	223	72	27	9	2.5	2.3
7					27	2,750	208	69	26	8	2.5	2.6
8					23	1,300	194	72	25	6.5	2.4	2.8
9					18	880	190	66	24	5.5	2.3	3.0
10					16	1,900	184	66	24	5.5	2.5	3.2
11					14	2,010	173	64	22	5	2.8	3.4
12					15	2,010	166	61	21	5	3.0	3.2
13					15	1,300	162	58	19	5	3.0	3.0
14					15	720	156	53	18	4.3	2.9	3.2
15					15	515	145	50	17	4.3	2.9	3.4
16					15	455	135	53	16	4.3	4.3	3.4
17					30	395	132	50	21	4.3	3.5	3.4
18					70	720	129	50	20	4.0	3.5	3.5
19				1.0	70	4,280	122	50	20	4.0	3.5	3.4
20				.9	880	1,790	119	48	19	4.0	3.4	3.2
21				1.0	4,810	1,120	116	45	18	3.9	3.3	3.2
22				1.0	2,750	880	107	45	18	3.9	3.6	3.3
23				1.2	545	720	101	45	15	3.8	3.9	3.3
24				1.2	455	645	98	45	16	3.5	3.6	3.2
25				2.4	575	575	95	45	14	3.6	3.2	3.0
26				3.0	425	515	95	45	13	3.8	2.9	3.0
27				2.0	325	485	95	45	14	3.7	2.8	38
28				1.7	257	425	95	45	13	3.6	2.6	20
29				1.8	.....	395	92	50	12	3.5	2.4	13
30				1.8	.....	335	86	45	12	3.2	2.3	8
31				1.8	.....	325	.....	45	.....	2.9	2.4	.....

Monthly discharge of Santa Ynez River above Mono Creek, near Santa Barbara, Calif., for 1903.

[Drainage area, 71 square miles.]

Month.	Discharge in second-feet.			
	Maximum.	Minimum.	Mean.	Run-off (total in acre-feet).
January	457	2	19	1,168
February	25	8	14	778
March	111	8	20	1,230
April	535	29	84	4,998
May	31	9	17	1,045
June 1-20	9	3	6	238
The period	.....	.....	.....	9,460

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Monthly discharge of Santa Ynez River near Santa Barbara, Calif., for 1904–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1904.				
January, 7–31	6.4	0.5	0.9	45
February	132	.6	12	690
March	446	2.3	30.6	1,882
April	121	6.0	19.1	1,137
May	18.5	2.6	6.9	424
June	5.0	.1	.7	42
July	.1	.0	.034	2
August	.0	.0	.0	0
September	5,450	.0	192	11,425
The period				15,600
1904–5.				
October	17.1	5.7	8.8	541
November	7.4	5.7	6.4	381
December	13	6.4	7.0	430
January	635	6.4	73.9	4,544
February	6,550	28	905	50,260
March	7,275	112	797	49,010
April	242	79	143	8,509
May	79	37	51.2	3,148
June	30	5	15.9	946
July	4	3	3.8	234
August	3	2	2.6	160
September	2	1	1.4	83
The year	7,275	1	163	118,000
1905–6.				
October	1	1	1.0	61
November	5	1	2.1	125
December	4	4	4.0	246
January	104	3	14.9	916
February	171	6	27.4	1,520
March	4,810	17	1,050	64,600
April	430	65	158	9,400
May	635	28	67.4	4,140
June	49	12	23.9	1,420
July	12	2.5	5.8	357
August	2.5	1.0	1.4	86
September	1	1	1	60
The year	4,810	1	115	82,900
1906–7.				
October	1	1	1	61
November	2.5	1	1.4	83
December	600	2	52.2	3,210
January	9,450	49	1,470	90,400
February	920	142	490	27,200
March	8,150	104	1,520	93,500
April	670	65	237	14,100
The period				229,000
1907–8.				
October	315	1	14.4	885
November	4	2	2.7	161
December	22	2	56	344
January	3,650	2.5	267	16,400
The period				17,800
1911–12.				
October	8	5	5.8	357
November	12	8	10.4	619
December	18	12	13.2	812
January	19	13	14.9	916
February	15	10	11.9	684
March	588	10	117	7,190
April	195	31	65.7	3,910
May	39	16	27.5	1,690
June	16	5.0	9.30	553
July	4.4	1.0	2.61	160
August	1.0	.4	.65	40.0
September	.4	.2	.31	18.4
The year	588	.2	23.4	16,900
1912–13.				
October	0.4	0.2	0.33	20
November	.6	.4	.55	33
December	1.0	.6	.80	49
January	80	.5	8.18	503
February	1,780	1.4	157	8,720
March	210	30	77.4	4,760
April	32	19	26.1	1,550
May	18	7.8	12.5	769
June	44	3.0	7.55	449
July	3.0	.8	1.24	76
August	23	.2	1.39	85
September	1.0	.1	.26	15
The year	1,780	.1	23.6	17,000
1913–14.				
October	.1	.1	.10	6
November	345	.1	18.0	1,070
December	53	3	7.9	486
January	8,500	10	797	49,000
February	8,350	139	1,030	57,000
March	650	151	296	18,200
April	147	71	98.1	5,840
May	76	36	49.5	3,040
June	34	14	24.1	1,430
July	14	5.5	9.52	585
August	5.0	2.0	3.47	213
September	2.5	2.0	2.03	121
The year	8,500	.1	190	137,000
1914–15.				
October	3	2	2.27	140
November	4	2.5	2.68	159
December	46	7.5	17.5	1,080
January	1,020	10	64.2	3,950
February	2,360	113	508	28,200
March	309	97	169	10,400
The period				43,900
1915–16.				
June	22	6.2	11.6	690
July	6.2	1.6	2.94	181
August	1.8	.1	1.06	65
September	1.9	.00	.205	12
The period				948
1916–17.				
October	25	3	6.5	400
November			6.0	357
December	2,500	9	123	7,560
January	215	62	110	6,760
February	1,730	38	300	16,700
March	329	67	129	7,930
April	64	34	46.0	2,740
May	32	16	23.6	1,450
June	15	2.0	7.94	472
July	1.9	.8	1.33	81.8
August	.9	.4	.55	33.8
September	.4	.2	.25	14.9
The year	2,500	.2	61.5	44,500
1917–18.				
January	3.0	0.9	1.60	41.3
February	4,810	1.4	395	21,900
March	4,280	166	930	57,200
April	310	86	160	9,520
May	80	45	56.3	3,460
June	36	12	20.7	1,230
July	12	2.9	5.58	343
August	4.3	2.3	2.98	183
September	38	2.3	5.31	316
The period				94,200

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SANTA YNEZ RIVER NEAR LOMPOC, CALIF.

LOCATION.—Near east boundary of La Misión Vieja de la Purísima grant, at highway bridge, about 1½ miles east of Lompoc, Santa Barbara County.

DRAINAGE AREA.—725 square miles (measured on topographic maps).

ELEVATION.—About 100 feet above sea level.

RECORDS AVAILABLE.—November 10, 1906, to January 9, 1907, and September 25, 1907, to September 30, 1918. (Discharge not computed for 1909.)

GAGE.—Vertical staff fastened to pier at right end of center span of bridge near downstream end. Datum lowered 1.00 foot June 27, 1907.

DISCHARGED MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand; shifting. Banks high and not subject to overflow.

EXTREMES OF DISCHARGE.—1906–1918: Maximum stage recorded, 13.0 feet January 25, 1914 (discharge, 41,800 second-feet); minimum discharge, 5 second-feet October 13 to 21, 1913.

DIVERSIONS.—Except for a small quantity diverted by the city of Santa Barbara at Gibraltar dam, water is not diverted above the station, but some water is pumped for irrigation from wells along the banks of the river.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves usually fairly well defined for low and medium stages. Gage read to half-tenths, sometimes to hundredths, once a day, more frequently during floods. Daily discharge ascertained by applying mean daily gage height to rating tables, by shifting-control method, or interpolating between discharge measurements. Records fair for periods when frequent discharge measurements were obtained; poor for other periods.

Discharge measurements of Santa Ynez River near Lompoc, Calif., for 1906–1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1906.		*Feet.*	*Sec-ft.*	1911.		*Feet.*	*Sec.-ft.*
Nov. 10	R. S. Hawley	5.02	10	May 10	Donald McDonald	3.00	389
Dec. 12	L. M. Hyde	5.88	259	June 7	do	3.00	243
1907.				July 11	do	2.90	127
				Aug. 19	do	2.75	55
Sept. 24	Clapp and Hyde	2.75	30	Sept. 8	do	2.70	47
1908.				8	F. C. Ebert	2.70	48
				Oct. 11	Donald McDonald	2.70	37
Jan. 28	L. M. Hyde	4.80	3,480	Nov. 13	do	2.72	45
29	do	3.85	1,490	Dec. 7	do	2.80	67
Mar. 10	W. F. Martin	3.28	418	1912.			
1909.				Jan. 18	Donald McDonald	2.77	61
Jan. 23	McDonald and Hyde	4.25	2,290	Feb. 10	do	2.72	55
23	do	4.15	1,850	25	do	2.79	42
24	do	3.85	1,150	25	F. C. Ebert	2.79	43
25	do	4.35	2,560	Mar. 6	Donald McDonald	3.26	199
26	do	6.65	11,100	Apr. 13	do	3.30	407
26	do	6.9	10,800	May 16	do	2.87	89
26	do	8.15	15,700	June 7	F. C. Ebert	2.86	54
26	do	8.5	18,500	10	Donald McDonald	2.86	44
27	McDonald and Dyer	6.25	8,040	July 11	do	2.79	27
27	Donald McDonald and H. M. McDonald	5.95	6,640	Aug. 10	do	2.80	21
				Sept. 9	do	2.79	21
1910.				Oct. 7	do	2.80	21
Jan. 30	W. B. Clapp	4.10	309	Nov. 11	do	2.83	24
Mar. 5	J. E. Stewart	3.84	112	Dec. 6	do	2.80	25
Apr. 15	D. McDonald	4.00	135				
May 4	do	3.90	98	1913.			
27	do	3.80	58	Jan. 8	Donald McDonald	2.82	34
June 9	J. E. Stewart	3.79	40	Feb. 13	do	3.00	80
9	do	3.79	42	25	do	4.60	[a] 4,470
Aug. 4	D. McDonald	3.55	20	Mar. 13	do	2.98	147
Sept. 14	C. C. Jacob	3.60	22	Apr. 11	do	2.67	63
				May 10	do	2.58	40
1911.				June 5	R. C. Rice	2.60	[b] 24
Feb. 27	W. V. Hardy	4.85	548	5	Donald McDonald	2.60	[b] 25
Mar. 2	Donald McDonald	6.50	4,930	July 14	do	2.51	17
22	do	2.80	1,870	Aug. 11	do	2.50	11
Apr. 11	do	2.90	765	Sept. 8	do	2.49	10

[a] Measurement not reliable owing to poor measuring conditions.
[b] Includes three-fourths second-foot estimated flow in secondary channels.

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Discharge measurements of Santa Ynez River near Lompoc, Calif., for 1906–1918—Contd.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1913.			
Nov. 12	Donald McDonald	2.61	26
20	do	2.96	194
Dec. 8	do	2.60	25
15	do	2.60	29
1914.			
Jan. 6	Donald McDonald	2.79	79
13	do	2.60	54
15	do	3.30	352
21	do	2.25	1,230
27	do	3.25	7,920
30	do	2.05	2,540
Feb. 2	do	1.40	1,400
9	R. F. Cowles	1.25	651
19	do	3.20	10,900
22	Donald McDonald	2.10	7,530
28	R. F. Cowles	.70	2,280
Mar. 9	Donald McDonald	.50	1,010
11	do	.50	861
16	do	.50	821
23	do	.40	644
31	do	.50	666
Apr. 6	do	.50	484
11	do	.40	367
13	do	.40	368
20	do	.30	268
May 11	do	.06	168
16	do	.10	152
18	R. F. Cowles	.13	151
25	Donald McDonald	.04	144
28	do	.10	124
28	F. C. Ebert	.10	119
June 1	Donald McDonald	.11	126
13	do	.04	108
July 17	do	—.08	53
Aug. 8	do	—.22	34
Sept. 12	do	—.25	34
Oct. 5	do	—.25	25
10	do	—.25	26
12	do	—.25	21
19	do	—.25	29
26	do	—.28	27
Nov. 7	do	—.25	31
9	do	—.25	33
16	do	—.22	32
23	do	—.22	30
30	do	—.22	28
Dec. 7	do	—.10	49
12	do	.00	83
14	do	.00	83
21	do	.05	111
28	do	—.10	85
1915.			
Jan. 4	Donald McDonald	—.05	75
11	do	—.10	73
16	do	—.10	71
18	do	—.10	77
20	do	—.12	64
20	F. C. Ebert	—.12	70
25	Donald McDonald	—.10	76
Feb. 1	do	.75	828
6	do	.70	837
9	do	4.85	37,900
15	do	1.05	1,[illegible]80
22	do	.85	1,280
Mar. 6	do	1.10	845
8	do	1.10	850
15	do	1.10	510
29	do	1.10	522
Apr. 5	do	.85	310
12	do	.85	305
17	do	.86	267
19	do	.90	256
26	do	.82	264
May 3	do	.95	367
6	do	1.30	860
11	do	1.10	433
18	do	1.00	304
24	do	.90	245
June 3	do	.80	144
3	Ewald Pyzel	.80	156
1915.			
June 7	Donald McDonald	0.78	164
12	do	.78	143
14	do	.75	126
21	do	.70	129
29	do	.72	85
July 5	do	.70	96
10	do	.70	77
12	do	.68	85
Aug. 2	do	.62	57
7	do	.60	44
9	do	.60	46
16	do	.60	46
23	do	.60	47
Sept. 6	do	.60	31
11	do	.60	38
13	do	.60	37
Oct. 4	do	.60	35
7	do	.60	34
16	do	.60	35
Nov. 8	do	.60	38
Dec. 6	do	.70	129
1916.			
Jan. 4	Donald McDonald	1.95	2,780
21	do	1.10	1,490
Feb. 7	do	1.00	945
22	do	1.05	460
Mar. 6	do	1.20	754
21	do	1.00	456
Apr. 10	do	.80	246
24	do	.70	185
May 8	do	.60	158
22	do	.50	93
June 6	do	.50	74
19	do	.55	49
July 10	do	.50	35
24	do	.45	32
Aug. 7	do	.45	30
24	do	.40	33
Sept. 4	do	.40	26
18	do	.40	25
Oct. 9	do	.45	37
23	do	.40	56
Nov. 6	do	.45	38
21	do	.45	40
Dec. 4	do	.50	60
18	do	.45	46
1917.			
Jan. 8	Donald McDonald	1.00	329
22	do	1.10	387
Feb. 5	do	.75	192
22	do	3.10	5,140
Mar. 5	do	1.10	603
20	do	.95	321
Apr. 9	do	.75	195
23	do	.75	160
30	F. C. Ebert	.65	108
May 7	Donald McDonald	.65	116
21	do	.60	83
June 4	do	.60	71
22	do	.60	37
26	F. C. Ebert	1.61	27
July 9	Donald McDonald	1.62	25
Aug. 20	do	1.50	22
Sept. 10	do	1.56	19
Oct. 8	do	1.56	18
Nov. 24	Dennis Daly	1.48	26
Dec. 16	do	1.50	22
1918.			
Jan. 1	Dennis Daly	1.50	24
10	F. C. Ebert	1.50	22
Feb. 3	Dennis Daly	1.50	25
24	do	2.60	3,160
Mar. 24	do	1.80	1,650
31	do	1.70	835
Apr. 8	do	1.60	554
14	do	1.60	383
15	do	1.60	392
May 19	do	1.05	186
21	F. C. Ebert	1.03	157

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Discharge measurements of Santa Ynez River near Lompoc, Calif., for 1906–1918—Contd.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1918.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
June 3	Dennis Daly	1.09	129	Aug. 4	Dennis Daly	0.76	31
9	do	1.02	99	11	do	.80	36
16	do	.92	104	18	do	.88	33
23	do	.88	88	25	do	.88	39
30	do	.88	67	Sept. 1	do	.88	31
July 7	do	.94	87	8	do	.88	40
14	do	.88	69	14	do	.90	47
28	do	.76	42	22	do	.90	41
30	F. C. Ebert	.75	30	29	do	.88	33

Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918.

Day.	Nov.	Dec.	Jan.	Sept.	Day.	Nov.	Dec.	Jan.	Sept.
1906–7.					1906–7.				
1		23	380		16	8	114		
2		23	295		17	8	101		
3		23	247		18	8	76		
4		23	224		19	8	76		
5		23	295		20	8	76		
6		23	320		21	8	64		
7		23	1,330		22	8	64		
8		23			23	8	64		
9		23			24	8	64		
10	8	23			25	16	64		30
11	8	64			26	16	76		30
12	8	450			27	23	146		30
13	8	450			28	23	1,090		30
14	8	247			29	23	640		30
15	8	164			30	23	495		30
					31		415		

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	30	197	67	67	950	1,120	295	240	90	90	30	18
2	30	155	67	67	1,390	1,035	240	240	90	90	30	18
3	30	122	67	67	4,630	1,035	240	240	90	90	30	18
4	30	122	67	67	3,860	950	240	240	90	90	18	18
5	30	122	67	67	1,890	950	240	240	90	90	18	18
6	30	90	90	67	1,680	870	197	197	90	90	18	18
7	30	90	122	67	1,300	870	197	197	90	90	18	18
8	30	90	122	67	1,300	870	197	197	90	90	18	18
9	30	90	122	67	3,200	790	197	197	90	90	18	18
10	30	90	90	67	3,200	630	240	197	90	67	18	18
11	30	90	90	67	2,100	480	240	155	90	67	18	18
12	30	90	67	67	1,890	415	240	155	90	67	18	18
13	30	90	67	67	1,680	480	240	155	90	44	18	18
14	30	90	67	155	1,480	480	240	155	90	44	18	18
15	30	90	67	155	1,300	480	240	155	90	44	18	18
16	30	90	90	155	1,120	480	240	155	90	44	18	18
17	30	90	90	155	790	480	240	122	90	44	18	18
18	30	90	90	122	870	555	240	90	90	30	18	18
19	30	90	67	122	870	630	240	90	90	30	18	18
20	30	67	67	122	870	630	240	90	90	30	18	18
21	30	67	67	122	950	555	240	90	90	30	18	18
22	44	67	67	90	1,210	480	240	90	90	30	18	18
23	155	67	67	90	1,120	480	240	90	90	30	18	30
24	155	67	67	155	950	480	240	90	90	30	18	122
25	197	67	67	2,210	950	480	240	90	90	30	18	44
26	555	67	67	3,420	950	480	240	90	90	30	18	30
27	415	67	67	5,070	1,035	415	240	90	90	30	18	18
28	555	67	67	4,520	1,035	350	240	90	90	30	18	18
29	350	67	67	1,390	1,210	350	240	90	90	30	18	18
30	295	67	67	1,300		350	240	90	90	30	18	18
31	197		67	1,035		350		90		30	18	

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Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918—Continued.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1908.				1908.				1908.			
1	18	18	18	11	18	18	44	21	18	18	30
2	18	18	18	12	18	18	67	22	18	18	30
3	18	18	44	13	18	18	30	23	18	18	30
4	18	18	18	14	18	18	30	24	18	18	30
5	18	18	90	15	18	18	18	25	18	18	18
6	18	18	90	16	18	18	18	26	18	18	18
7	18	18	67	17	18	18	18	27	18	18	18
8	18	18	44	18	18	18	18	28	18	18	18
9	18	18	44	19	18	18	44	29	18	18	18
10	18	18	197	20	18	18	30	30	18	18	18
								31	18	.....	18

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910.									
1	11,100	225	150	550	95	52	30	20	22
2	1,580	225	90	385	95	51	30	20	22
3	1,200	225	90	380	95	49	30	20	22
4	750	225	90	275	95	48	30	20	22
5	620	150	90	275	95	47	30	20	22
6	620	150	120	275	95	46	30	20	22
7	620	150	120	275	95	44	26	20	22
8	500	150	90	275	95	43	26	20	22
9	500	150	90	197	95	42	26	20	22
10	400	150	90	197	95	42	26	20	22
11	310	150	90	197	95	42	26	20	22
12	310	150	90	197	95	42	26	20	22
13	225	150	90	197	95	42	26	20	22
14	225	150	150	197	95	42	26	20	22
15	500	150	120	138	95	42	22	20	30
16	620	150	90	138	95	42	22	22	30
17	1,040	150	90	138	58	36	22	22	30
18	750	150	150	138	58	36	22	22	26
19	620	150	150	138	58	36	22	22	26
20	500	150	150	138	38	36	22	22	22
21	500	150	150	95	58	36	20	22	22
22	400	150	740	95	58	36	20	22	22
23	400	150	480	95	58	30	20	22	22
24	400	150	375	95	58	30	20	22	22
25	400	150	275	95	58	30	20	22	22
26	400	150	270	95	58	30	22	22	22
27	400	150	615	95	58	30	22	22	22
28	310	150	1,260	95	57	30	20	22	22
29	310	.....	785	95	56	30	20	22	22
30	310	.....	640	95	54	30	20	22	22
31	225	.....	625	.....	53	.....	20	22	.....

NOTE.—Daily discharge determined from rating curves applicable as follows: Jan. 1 to Mar. 21, 1910, poorly defined and only approximate above 400 second-feet; Mar. 22 to Apr. 3, 1910, indirect method for shifting control. Apr. 4 to May 27, 1910, poorly defined: May 28 to June 8, 1910, interpolated: June 9, 1910, to Jan. 29, 1911, poorly defined; Jan. 30 to Mar. 9, 1911, poorly defined; Mar. 10 to June 6, 1911, indirect method for shifting control: June 7 to Aug. 16, 1911, poorly defined: Aug. 17, 1911, to June 30, 1912, indirect method for shifting control and rating tables covering short periods of time.

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Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	22	22	30	30	2,070	4,750	1,400	520	274	127	97	45
2	22	22	30	30	790	5,290	1,340	500	269	127	97	45
3	22	22	30	30	230	2,070	1,270	590	264	127	97	46
4	22	26	30	30	4,930	6,430	1,210	470	258	127	96	46
5	22	30	30	30	2,610	7,030	1,150	460	253	127	97	47
6	22	30	30	30	1,830	7,030	1,090	440	248	127	97	47
7	22	30	30	30	970	19,000	1,020	430	243	127	97	48
8	22	30	30	30	620	16,100	960	420	243	127	97	48
9	22	30	30	30	620	20,400	900	400	243	127	97	48
10	22	30	30	64	620	15,000	830	389	243	127	97	47
11	22	30	30	335	1,380	9,000	765	384	243	127	97	47
12	22	30	30	260	1,170	6,000	745	379	243	127	97	47
13	26	30	30	260	790	3,800	725	373	243	127	67	46
14	26	30	30	260	1,170	3,300	700	368	243	127	67	46
15	26	30	30	335	790	3,200	680	363	243	127	67	46
16	26	30	30	430	620	2,500	660	358	243	127	67	45
17	22	30	30	195	470	2,000	820	353	243	127	55	45
18	22	30	30	97	470	1,900	800	347	243	127	55	45
19	22	30	30	64	470	2,100	770	342	243	97	55	44
20	22	30	42	64	620	2,000	750	337	127	97	56	44
21	22	30	36	64	620	1,900	730	332	127	97	56	44
22	22	30	36	64	620	1,870	710	327	127	97	57	43
23	22	30	36	42	620	1,600	690	321	127	97	40	43
24	22	30	30	42	620	1,900	660	316	127	97	40	43
25	22	30	30	430	620	1,630	640	311	127	97	41	42
26	22	30	30	810	470	1,370	800	305	127	97	41	42
27	22	30	30	430	470	1,500	600	300	127	97	42	42
28	26	30	30	670	790	1,270	580	295	127	97	42	41
29	26	30	30	17,300	.....	1,210	550	290	127	97	43	41
30	26	30	30	3,210	.....	1,150	530	284	127	97	44	41
31	26	.....	30	7,030	.....	1,270	.....	279	.....	97	44	.....
1911–12.												
1	40	37	37	80	45	45	125	75	70	29	23	21
2	40	37	37	80	45	45	125	75	70	29	23	21
3	40	37	37	80	45	45	126	80	70	29	23	21
4	39	37	37	80	45	95	125	80	70	29	23	21
5	39	37	37	80	45	95	125	85	70	29	23	21
6	39	37	37	80	45	280	125	85	70	28	22	21
7	38	37	67	80	45	350	125	[a] 90	70	28	22	21
8	38	37	67	80	45	50	70	[a] 90	70	28	22	21
9	38	37	67	80	45	55	70	[a] 90	70	28	22	21
10	37	37	67	80	45	185	70	95	70	28	21	21
11	37	37	67	80	45	110	125	95	70	27	21	21
12	37	37	67	80	45	670	540	100	70	27	21	21
13	37	37	67	80	45	560	410	100	70	27	21	21
14	37	37	67	80	45	340	300	100	70	27	21	21
15	37	37	67	80	45	170	205	100	30	27	21	21
16	37	37	67	80	45	185	205	100	30	27	21	21
17	37	37	67	80	45	205	205	100	30	26	21	21
18	37	37	67	80	40	205	205	100	30	26	21	21
19	37	37	67	80	35	205	205	95	30	26	21	21
20	37	37	67	80	32	205	205	95	30	26	21	21
21	37	37	67	80	30	205	205	90	30	26	21	21
22	37	37	67	80	28	205	125	90	30	25	21	21
23	37	37	67	45	25	205	125	85	30	25	21	21
24	37	37	67	45	22	205	125	85	30	25	21	21
25	37	37	67	45	45	205	125	150	30	25	21	21
26	37	37	67	45	45	205	125	150	30	25	21	21
27	37	37	67	45	45	205	125	140	30	24	21	21
28	37	37	67	45	45	205	70	140	30	24	21	21
29	37	37	67	45	45	205	70	135	30	24	21	21
30	37	37	67	45	.....	205	70	135	30	24	21	21
31	37	.....	67	45	.....	125	.....	135	.....	24	21	.....

[a] Gage not read; discharge interpolated.

NOTE.—Daily discharge determined by indirect method for shifting control and rating tables covering short periods of time. Discharge Oct. 1 to 10, 1911, interpolated.

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Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.
1912-13.												
1	21	23	25	32	37	350	93	47	26	17	11	11
2	21	23	25	33	35	350	90	46	25	17	11	11
3	21	23	25	33	33	350	87	45	25	17	11	11
4	21	24	25	33	31	240	84	44	24	17	11	11
5	21	24	25	33	29	240	81	44	24	17	11	11
6	21	24	25	34	27	240	78	43	24	17	11	11
7	21	24	25	34	25	240	75	42	24	17	11	11
8	21	24	25	34	70	150	72	41	24	17	11	11
9	21	24	25	34	125	150	69	40	24	17	11	11
10	21	24	26	34	185	150	66	40	24	17	11	11
11	21	24	26	34	100	150	63	40	24	17	11	11
12	21	24	26	34	90	150	62	39	24	17	11	11
13	21	24	27	34	80	150	61	38	24	17	11	11
14	21	24	27	34	80	147	60	38	24	17	11	11
15	21	24	27	125	80	144	60	37	24	11	11	11
16	21	24	28	70	80	141	59	36	24	11	11	11
17	22	24	28	68	75	138	58	36	24	11	11	11
18	22	24	28	66	75	135	57	35	24	11	11	11
19	22	24	28	64	75	132	56	34	24	11	11	11
20	22	24	29	62	75	129	56	34	24	11	11	11
21	22	24	29	60	70	126	55	33	24	11	11	11
22	22	24	29	58	70	123	54	32	24	11	11	11
23	22	24	30	56	70	120	53	32	24	11	11	11
24	22	25	30	54	125	117	52	31	24	11	11	11
25	22	25	30	52	4,470	114	52	30	24	11	11	11
26	23	25	31	50	2,600	111	51	30	24	11	11	11
27	23	25	31	48	900	108	50	29	24	11	11	11
28	23	25	31	46	500	105	49	28	17	11	24	11
29	23	25	32	44	.....	102	48	28	17	11	24	11
30	23	25	32	42	.....	99	48	27	17	11	24	11
31	23	.....	32	40	.....	96	.....	26	.....	11	11	.....

NOTE.—Daily discharge determined by indirect method for shifting control, interpolation between measurements, and rating curves covering short periods. Observer's measurement Feb. 25 taken as mean discharge for day.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.
1913-14.												
1	11	11	17	314	1,600	2,500	635	217	126	48	37	34
2	11	11	17	143	1,400	1,700	605	212	125	48	37	34
3	11	11	17	142	1,200	1,650	575	207	123	48	36	34
4	11	11	24	110	1,600	1,350	545	202	122	47	36	34
5	11	11	24	81	1,600	1,300	515	197	120	47	35	34
6	11	11	24	79	1,200	1,220	484	192	119	47	35	34
7	11	11	24	75	1,200	1,150	460	187	117	46	34	34
8	11	11	24	71	900	1,080	437	182	116	46	34	34
9	11	11	24	68	651	1,010	414	177	114	45	34	34
10	7	11	24	64	600	980	391	172	113	45	34	34
11	7	11	17	61	600	950	367	168	111	45	34	34
12	[illegible]	17	17	57	600	920	368	164	110	44	34	34
13	[illegible]	[illegible]	17	54	350	890	368	161	108	44	34	34
14	[illegible]	[illegible]	29	54	350	861	333	158	94	44	34	34
15	5	227	29	275	200	841	339	155	80	43	34	33
16	5	119	28	600	200	821	325	152	67	43	34	33
17	5	51	28	2,200	200	795	311	153	53	42	34	33
18	5	24	27	30,800	6,650	770	297	152	53	42	34	32
19	5	92	16	4,250	10,900	745	283	150	53	42	34	32
20	5	227	26	2,200	24,800	720	268	149	52	41	34	32
21	5	119	15	1,230	25,500	695	264	148	52	41	34	32
22	11	69	25	725	7,530	670	260	147	52	41	34	31
23	11	51	25	500	6,050	644	256	146	51	40	34	31
24	11	24	24	2,800	4,050	646	252	145	51	40	34	31
25	11	24	92	22,200	2,750	649	247	144	51	40	34	30
26	11	17	51	22,000	2,350	652	242	136	50	39	34	30
27	11	17	35	7,920	2,000	655	237	129	50	39	34	30
28	11	17	23	4,650	2,280	658	232	122	50	39	34	29
29	11	17	22	3,750	.....	661	227	123	49	38	34	29
30	11	17	88	2,540	.....	664	222	124	49	38	34	29
31	11	.....	87	2,000	.....	666	.....	125	.....	37	34	.....

NOTE.—High-water discharge October to January read from curves or computed by shifting-control method; discharge Mar. 9 to Sept. 30 interpolated between measurements, except for slight rise Mar. 29-30, as the stage was falling gradually.

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Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	29	29	85	80	1,080	1,550	365	325	165	88	59	37
2	28	29	70	78	6,100	1,650	365	400	155	90	57	36
3	27	29	50	77	4,880	1,350	335	367	150	92	55	35
4	26	30	50	75	2,170	1,050	335	460	153	94	52	34
5	25	30	70	75	1,080	950	310	1,720	157	96	49	33
6	25	30	50	75	837	845	310	860	160	92	46	31
7	25	31	49	74	837	848	310	830	164	88	44	32
8	26	32	55	74	2,950	850	335	620	160	84	45	34
9	26	33	62	73	32,500	800	305	530	156	80	46	35
10	26	33	69	73	20,200	1,050	305	510	152	77	46	37
11	25	33	76	73	15,500	850	305	433	148	81	46	38
12	24	33	83	73	9,200	800	305	425	143	85	46	38
13	24	32	83	72	5,700	600	296	415	135	84	46	37
14	25	32	83	72	3,100	550	290	365	126	83	46	37
15	26	32	85	71	1,590	510	282	325	126	81	46	37
16	27	32	85	71	1,500	510	274	315	127	80	46	37
17	28	32	270	74	2,100	510	267	310	127	79	46	37
18	29	32	110	77	2,350	460	262	304	128	77	46	36
19	29	31	165	72	2,000	460	256	295	128	76	46	36
20	29	31	135	67	2,250	460	260	285	129	75	47	36
21	29	30	111	68	1,900	460	265	275	129	73	47	36
22	28	30	90	70	1,280	460	250	265	124	72	47	36
23	28	30	80	72	1,500	410	260	255	118	71	47	36
24	27	30	85	74	3,450	410	290	245	113	69	45	36
25	27	30	70	76	2,200	410	275	235	107	68	44	35
26	27	29	55	76	1,700	410	264	225	102	67	43	35
27	27	29	80	76	1,600	410	265	215	96	65	42	35
28	27	28	85	160	1,300	410	265	205	91	64	41	35
29	28	28	84	1,760	.....	522	265	195	85	63	40	35
30	28	28	82	5,300	.....	460	320	185	86	61	39	35
31	28	.....	81	1,480	.....	365	.....	175	.....	60	38	.....

NOTE.—Discharge interpolated between measurements Oct. 1 to Nov. 31; Dec. 7–14; Dec. 28 to Jan. 27; and May 18 to Sept. 30. Remainder of record obtained by shifting-control method, and from rating curves covering short periods.

1915–16.												
1	35	37	40	25	1,300	680	340	171	81	41	31	28
2	35	38	40	85	1,300	600	340	169	79	41	31	27
3	35	38	40	850	1,110	530	285	167	78	40	31	26
4	35	38	460	3,370	1,110	460	285	165	76	39	30	26
5	35	39	340	1,150	1,110	600	285	163	75	39	30	26
6	34	39	130	760	1,200	760	285	161	74	38	30	26
7	34	39	130	600	940	680	285	160	72	37	30	26
8	34	40	130	460	915	600	230	158	70	37	30	26
9	34	40	85	460	885	530	230	155	68	36	30	26
10	34	40	85	1,390	860	460	230	150	66	35	30	26
11	34	40	40	940	830	460	227	[a] 145	64	35	[a] 31	26
12	35	40	40	600	805	460	224	140	62	35	[a] 31	25
13	[a] 35	40	40	600	775	460	221	135	60	34	[a] 31	25
14	35	40	230	600	750	460	217	130	58	34	[a] 31	25
15	35	40	180	760	720	460	214	125	56	34	[a] 31	25
16	35	40	130	760	695	340	211	120	54	34	[a] 32	25
17	35	40	130	15,000	665	340	208	115	52	34	[a] 32	25
18	35	40	40	6,660	640	340	204	110	50	33	[a] 32	25
19	[a] 35	40	40	3,340	610	340	201	105	49	33	[a] 32	25
20	[a] 35	40	40	1,690	585	460	198	100	49	33	[a] 32	25
21	[a] 35	40	40	1,490	555	460	195	95	48	33	[a] 33	25
22	[a] 35	40	40	1,310	530	460	191	93	47	33	[a] 33	25
23	36	40	25	1,310	530	460	188	92	47	32	33	25
24	36	40	25	1,140	460	460	185	91	46	32	33	25
25	36	40	10	1,690	460	400	183	89	45	32	32	25
26	36	40	10	1,490	460	400	181	88	45	32	32	25
27	36	40	10	6,220	940	400	179	87	44	32	31	25
28	36	40	10	7,980	940	340	177	85	43	31	30	25
29	37	40	10	6,300	760	340	175	84	43	31	30	25
30	37	40	25	2,000	.....	340	173	83	42	31	29	50
31	37	.....	25	1,300	.....	340	.....	82	.....	31	28	.....

[a] Gage not read; discharge interpolated.

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Daily discharge, in second-feet, of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	50	44	40	250	285	710	220	109	73	26	a 23	20
2	75	43	40	320	285	710	220	110	72	26	a 23	20
3	60	41	140	400	220	600	192	111	71	26	a 23	20
4	50	40	60	490	220	600	192	112	71	26	a 23	20
5	50	39	60	320	192	600	192	113	69	26	a 23	20
6	75	38	60	320	192	600	192	114	65	25	a 23	20
7	50	38	60	250	192	550	192	116	63	25	a 23	19
8	40	38	60	320	192	550	192	113	61	25	a 23	19
9	37	38	60	320	192	a 525	192	111	59	25	a 23	19
10	75	38	60	320	192	a 500	192	108	58	25	a 23	19
11	70	39	48	a 320	192	a 475	192	106	56	25	a 23	19
12	a 68	39	48	a 400	192	a 450	192	104	54	25	a 23	19
13	66	39	48	a 500	192	a 425	192	101	52	25	a 22	19
14	65	39	48	250	192	a 400	192	99	50	25	a 22	19
15	64	39	48	250	192	a 375	192	97	48	25	a 22	19
16	63	40	48	250	192	a 350	190	94	47	24	a 22	19
17	62	40	48	250	192	320	190	92	45	24	22	19
18	61	40	48	250	192	320	190	90	43	24	22	19
19	60	40	48	400	192	320	190	87	41	a 24	22	19
20	59	40	48	600	435	320	190	85	39	a 24	22	19
21	58	40	48	490	1,610	320	165	83	38	a 24	22	19
22	57	40	48	400	5,500	320	165	82	37	a 24	22	19
23	56	40	48	320	1,920	285	165	81	34	a 24	22	19
24	54	40	1,000	320	1,220	285	165	80	32	a 24	21	19
25	53	40	4,500	320	4,480	285	140	79	30	a 24	21	18
26	52	40	750	320	2,140	285	140	78	27	a 24	21	18
27	50	40	190	320	950	285	a 132	77	27	a 24	21	18
28	49	40	140	360	830	285	a 124	76	27	a 24	21	18
29	48	40	140	360	.....	252	a 116	76	27	a 23	21	18
30	46	40	140	320	.....	252	108	75	27	a 23	21	18
31	45	.....	140	285	.....	220	.....	74	.....	a 23	20	.....
1917–18.												
1	18	22	24	24	25	1,500	800	.....	135	74	30	31
2	18	22	24	24	25	1,200	765	.....	133	74	31	31
3	18	22	24	24	25	1,200	730	.....	131	74	31	31
4	18	22	24	24	25	1,200	695	.....	132	81	31	31
5	18	22	24	24	25	1,350	660	.....	132	87	31	31
6	18	24	24	22	25	1,420	625	.....	124	74	31	31
7	18	24	24	22	25	4,300	590	.....	124	87	31	31
8	18	24	24	22	25	4,020	554	.....	114	87	34	40
9	18	24	22	22	25	3,350	525	.....	99	74	34	41
10	18	24	22	22	25	2,830	497	.....	99	74	36	42
11	18	24	22	22	25	6,750	468	.....	100	81	36	44
12	18	24	22	22	25	4,500	440	.....	100	74	36	45
13	18	24	22	22	25	4,020	411	.....	102	69	35	46
14	18	24	22	22	25	2,830	383	.....	103	69	35	47
15	18	24	22	22	25	2,520	392	.....	104	68	34	47
16	20	26	22	23	70	2,150	386	.....	104	66	34	46
17	20	26	22	23	70	1,980	380	.....	104	64	33	45
18	20	26	22	23	100	1,980	374	.....	104	62	33	44
19	20	26	22	23	900	11,700	368	186	96	60	34	43
20	20	26	22	23	13,300	3,800	362	172	96	58	34	42
21	20	26	22	23	14,400	2,520	.....	157	96	56	35	41
22	20	26	22	24	6,230	2,240	.....	155	88	54	36	41
23	20	26	22	24	3,580	1,980	.....	153	88	52	37	33
24	20	26	24	24	2,830	1,650	.....	151	85	50	38	33
25	20	26	24	24	2,340	1,530	.....	149	81	48	39	33
26	22	26	24	24	2,150	1,420	.....	147	79	46	38	33
27	22	26	24	24	2,150	1,300	.....	145	76	44	37	33
28	22	26	24	25	1,800	1,180	.....	143	73	42	36	33
29	22	26	24	25	.....	1,070	.....	141	70	36	34	33
30	22	26	24	25	.....	950	.....	139	67	30	33	33
31	22	.....	24	25	.....	835	.....	137	.....	30	32	.....

a Gage not read; discharge interpolated.

NOTE.—No gage-height record Nov. 4–23, discharge interpolated; Apr. 21–30, discharge estimated as 330 second-feet; and May 1–13, discharge estimated as 240 second-feet.

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Monthly discharge of Santa Ynez River near Lompoc, Calif., for 1906–1908 and 1910–1918.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1906–7.				
November, 10-30	23	8	11.5	479
December	1,090	23	169	10,400
January, 1–7	1,330	224	442	6,140
September, 25-30	30	30	30.0	357
1907–8.				
October	555	30	114	7,010
November	197	67	90.5	5,390
December	122	67	76.8	4,720
January	5,070	67	686	42,200
February	4,630	790	1,880	108,000
March	1,120	350	613	37,700
April	295	197	236	14,000
May	240	90	145	8,920
June	90	90	90	5,360
July	90	30	53.3	3,280
August	30	18	19.2	1,180
September	122	18	23.1	1,370
The year	5,070	18	336	239,000
1908.				
October	18	18	18	1,110
November	18	18	18	1,070
December	197	18	38.5	2,370
The period	.....	.....	.....	4,550
1910.				
January	11,100	225	872	53,600
February	225	150	161	8,940
March	1,260	90	271	16,700
April	550	95	188	11,200
May	95	53	76.7	4,720
June	52	30	39.1	2,330
July	30	20	24.0	1,480
August	22	20	21.0	1,290
September	30	22	23.1	1,370
The period	.....	.....	.....	102,000
1910–11.				
October	26	22	23.0	1,410
November	30	22	29.1	1,730
December	42	30	31.0	1,910
January	17,300	30	1,060	65,200
February	4,930	230	1,000	55,500
March	20,400	1,150	5,020	309,000
April	1,400	530	836	49,700
May	590	279	374	23,000
June	274	127	204	12,100
July	127	97	114	7,010
August	97	40	69.1	4,250
September	48	41	44.8	2,670
The year	20,400	22	734	533,000
1911–12.				
October	40	37	37.6	2,310
November	37	37	37.0	2,200
December	67	37	61.2	3,760
January	80	45	69.8	4,290
February	45	22	41.4	2,380
March	670	45	202	12,400
April	540	70	162	9,640
May	150	75	102	6,270
June	70	30	48.7	2,900
July	29	24	26.5	1,630
August	23	21	21.5	1,320
September	21	21	21.0	1,250
The year	670	21	69.4	50,400
1912–13.				
October	23	21	21.7	1,330
November	25	23	24.1	1,430
December	32	25	27.8	1,710
January	125	32	47.6	2,930
February	4,470	25	365	20,300
March	350	96	164	10,100
April	93	48	63.3	3,770
May	47	26	36.3	2,230
June	26	17	23.4	1,390
July	17	11	13.7	842
1912–13.				
August	24	11	12.3	756
September	11	11	11.0	655
The year	4,470	11	65.5	47,400
1913–14.				
October	11	5	8.9	547
November	227	11	49.7	2,960
December	92	15	30.3	1,860
January	30,800	54	3,610	222,000
February	25,500	200	3,900	217,000
March	2,500	644	952	58,500
April	635	222	359	21,400
May	217	122	161	9,900
June	126	49	82.7	4,920
July	48	37	42.9	2,640
August	37	34	34.4	2,120
September	34	29	32.4	1,930
The year	30,800	5	754	546,000
1914–15.				
October	29	24	26.9	1,650
November	33	28	30.6	1,820
December	270	49	86.7	5,330
January	5,300	67	345	21,200
February	32,500	837	4,740	263,000
March	1,650	365	690	42,400
April	365	250	293	17,400
May	1,720	175	405	24,900
June	165	85	131	7,800
July	96	60	77.9	4,790
August	59	38	46.2	2,840
September	38	31	35.6	2,120
The year	32,500	24	547	395,000
1915–16.				
October	37	34	35.2	2,160
November	49	37	39.6	2,360
December	460	10	84.5	5,200
January	15,000	25	2,330	143,000
February	1,300	460	808	46,400
March	760	340	465	28,600
April	340	173	225	13,400
May	171	82	123	7,560
June	81	42	58.1	3,460
July	41	31	34.6	2,130
August	33	28	31.0	1,910
September	50	25	26.3	1,560
The year	15,000	10	356	258,000
1916–17.				
October	75	37	57.0	3,500
November	44	38	39.7	2,360
December	4,500	40	267	16,400
January	600	250	342	21,000
February	5,500	192	821	45,600
March	710	220	412	25,300
April	220	108	177	10,500
May	116	74	94.6	5,820
June	73	27	48.1	2,860
July	26	23	24.5	1,510
August	23	20	22.1	1,360
September	20	18	19.0	1,130
The year	5,500	18	190	137,000
1917–18.				
October	22	18	19.4	1,190
November	26	22	24.7	1,470
December	24	22	23.0	1,410
January	25	22	23.3	1,430
February	14,400	25	1,800	100,000
March	11,700	835	2,620	161,000
April	800	.....	457	27,200
May	.....	137	203	12,500
June	135	67	101	6,010
July	87	30	62.7	3,860
August	39	30	34.2	2,100
September	47	31	37.8	2,250
The year	14,400	18	443	320,000

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MONO CREEK NEAR SANTA BARBARA, CALIF.

LOCATION.—In S. ½ sec. 8, T. 5 N., R. 26 W. (unsurveyed), at Mono Flat dam site, about half a mile below mouth of Indian Creek, half a mile above junction with Santa Ynez River, 3½ miles east of river measurements station on Santa Ynez River at Gibraltar dam, and 8 miles northeast of Santa Barbara, Santa Barbara County.

DRAINAGE AREA.—126 square miles.[1]

ELEVATION.—About 1,400 feet above sea level.

RECORDS AVAILABLE.—January 1, 1903, to June 30, 1904.

GAGE.—Inclined staff fastened to willow tree on right bank about 500 feet below dam site.

DISCHARGE MEASUREMENTS.—Made from cable just above gage or by wading.

DISCHARGE.—Measured by weir November 1 to December 31, 1903.

CHANNEL AND CONTROL.—Sand and gravel; fairly permanent. Both banks are high and not subject to overflow; channel slightly curved for about 500 feet above and below gage.

DIVERSIONS.—No information.

REGULATION.—No information.

Discharge measurements of Mono Creek near Santa Barbara, Calif., for 1902-1904.

[Made by H. Rankin and R. L. North.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1902.	*Feet.*	*Sec.-ft.*	1903.	*Feet.*	*Sec.-ft.*	1903.	*Feet.*	*Sec.-ft.*
Nov. 11		8.7	Mar. 25	2.50	153	May 22	1.42	9.3
1903.			26	1.90	62	23	1.42	9.1
Jan. 28	2.95	295	27	1.70	36	25	1.41	8.8
29	1.55	20	28	1.60	27	26	1.41	8.4
30	1.30	12.5	29	1.61	30	27	1.40	7.7
31	1.25	9.0	30	2.65	177	28	1.40	7.5
Feb. 1	1.35	14.8	31	2.80	227	29	1.40	7.5
2	1.30	10.1	Apr. 1	4.50	710	30	1.40	7.4
3	1.20	6.9	2	3.00	270	June 1	1.37	6.2
4	1.28	8.8	3	2.50	131	2	1.35	5.7
5	1.28	8.2	4	2.40	92	3	1.33	5.7
6	1.21	8.1	5	2.20	69	4	1.30	4.4
8	1.35	12.0	6	2.00	52	5	1.28	3.4
9	1.29	8.8	7	1.90	41	6	1.28	3.2
10	1.28	8.4	8	1.85	40	8	1.35	5.1
11	1.27	8.8	9	1.80	39	9	1.40	8.2
12	1.26	8.2	10	1.77	34	10	1.45	10.6
13	1.25	7.6	11	1.73	29	11	1.40	8.6
14	1.20	4.9	12	1.70	28	12	1.35	4.7
16	1.20	5.1	14	1.65	26	13	1.33	4.4
17	1.20	5.0	15	1.63	25	15	1.30	3.3
18	1.20	5.1	16	2.20	71	16	1.30	3.2
19	1.20	5.2	17	2.40	106	17	1.30	3.2
20	1.19	4.8	18	2.30	94	18	1.29	3.0
21	1.19	4.7	19	2.35	90	20	1.22	2.0
23	1.17	4.6	20	2.10	72	July 12	.80	.4
24	1.15	4.6	21	2.00	59			
25	1.15	4.6	22	1.90	46	1904.		
26	1.15	4.4	23	1.85	43	Feb. 28	1.80	30.0
27	1.14	3.8	24	1.80	38	29	1.41	3.5
28	1.14	3.8	25	1.75	36	Mar. 11	1.90	32.0
Mar. 1	1.12	3.6	27	1.70	29	12	1.48	8.0
2	1.12	3.6	28	1.70	28	13	1.35	2.6
3	1.12	3.6	29	1.67	28	14	1.33	2.3
4	1.30	11.0	30	1.65	27	25	1.71	18.2
5	1.00	26	May 2	1.60	24	27	1.52	8.2
6	1.37	13.6	3	1.58	21	29	1.48	7.9
7	1.35	13.3	4	1.56	19.2	Apr. 1	1.52	8.1
9	1.30	9.8	5	1.55	18.9	3	1.43	4.1
10	1.25	6.6	6	1.52	17.2	19	1.95	34.0
11	1.22	6.3	7	1.50	17.0	20	1.77	19.4
12	1.22	6.6	8	1.50	16.4	21	1.64	9.7
13	1.22	6.5	10	1.50	15.6	24	1.45	5.4
14	1.27	9.2	11	1.48	14.3	25	1.42	4.0
15	1.25	7.5	12	1.48	14.0	26	1.63	8.9
16	1.30	9.8	13	1.48	13.8	27	1.63	8.8
17	1.32	9.9	14	1.47	13.6	29	1.62	8.2
18	1.26	8.2	15	1.45	13.5	May 1	1.46	6.4
19	1.25	8.0	16	1.45	11.8	5	1.43	4.2
20	1.24	7.1	17	1.43	11.7	7	1.32	2.1
21	1.24	7.1	18	1.43	11.7	9	1.32	2.0
22	1.23	7.2	19	1.43	11.8	11	1.32	2.0
23	1.23	7.2	20	1.42	10.3			
			21	1.42	10.0			

[1] Previously published as 119 square miles.

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Daily discharge, in second-feet, of Mono Creek near Santa Barbara, Calif., for 1903–4.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1903.							1903.						
1	0.2	15	4	710	26	6	16	0.2	5	10	71	12	3
2	.2	10	4	270	24	6	17	.2	5	10	106	12	3
3	.2	7	4	131	21	6	18	.2	5	8	94	12	3
4	.2	9	11	92	19	4	19	.2	5	8	90	12	3
5	.2	8	26	69	19	3	20	.2	5	7	72	10	2
6	.2	8	14	52	17	3	21	.2	5	7	59	10	.....
7	.2	8	13	41	17	4	22	.2	5	7	46	9	.....
8	.2	12	12	40	16	5	23	.2	5	7	43	9	.....
9	.2	9	10	39	16	8	24	.2	5	7	38	9	.....
10	.2	8	7	34	16	11	25	.2	5	153	36	9	.....
11	.2	9	6	29	14	9	26	.2	4	63	33	8	.....
12	.2	8	7	28	14	5	27	.2	4	36	29	8	.....
13	.2	8	6	28	14	4	28	295	4	27	28	7	.....
14	.2	5	9	26	14	4	29	20	.....	30	28	8	.....
15	.2	5	8	25	14	3	30	13	.....	177	27	7	.....
							31	9	.....	227	.....	7	.....

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1903–4.							
1	0.05	0.04	0.04	0.88	7.4	5.3	1.4
2	.05	.04	.04	.49	5.6	5.6	1.4
3	.05	.04	.04	.30	4.4	6.0	1.4
4	.04	.04	.04	.10	3.1	6.3	1.4
5	.05	.04	.04	.10	3.1	4.4	1.4
6	.05	.04	.04	.09	3.1	2.8	1.4
7	.04	.04	.04	.08	2.8	1.9	1.4
8	.05	.04	.04	.06	2.4	1.9	1.3
9	.04	.04	.04	.06	2.4	1.9	1.0
10	.05	.04	.04	.19	2.4	1.9	1.3
11	.05	.04	.04	31	2.4	1.9	1.3
12	.05	.04	.03	6	2.4	3.3	1.1
13	.05	.04	.06	2.4	2.4	3.1	1.1
14	.05	.04	.06	2.0	2.4	3.1	1.0
15	.05	.04	.06	2.0	2.4	2.8	1.0
16	.05	.04	.23	1.9	2.4	2.8	1.0
17	.05	.04	.09	1.7	2.6	2.6	1.0
18	.05	.04	.03	1.5	2.6	2.4	1.0
19	.05	.07	.03	1.1	35	2.2	1.0
20	.05	.05	.03	1.1	21	2.2	1.0
21	.05	.05	.03	1.1	13.3	2.4	1.0
22	.05	.04	.03	1.1	10.2	2.4	1.0
23	.05	.04	.03	1.6	7.4	2.2	1.0
24	.05	.04	.03	76	5.0	2.0	1.0
25	.05	.04	.03	17.4	4.1	2.2	1.0
26	.05	.04	.03	11.2	12.8	2.4	.9
27	.05	.04	285	7.4	12.8	2.2	.8
28	.05	.04	30	6.6	12.8	2.0	.7
29	.05	.04	3.8	6.0	12.2	1.9	.6
30	.06	.04	.....	6.6	11.2	1.7	.6
31	.06	.04	.....	7.4	.....	1.5	.....

Monthly discharge of Mono Creek near Santa Barbara, Calif., for 1903–4.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1903.					1903–4.				
January	295	0.2	11	676	November	.....	.....	0.05	3
February	15	4	7	389	December	.....	.....	.05	3
March	227	4	30	1,845	January	0.07	0.04	0.04	2
April	710	25	81	4,820	February	285	.03	11	633
May	26	6	13	799	March	76	.06	6.3	387
June 1–20	11	2	5	198	April	35	2.4	7.1	422
					May	6.3	1.5	2.8	172
The period	.....	.....	.....	8,730	June	1.4	.6	1.1	65
					The period	.....	.....	.....	1,690

NOTE.—Discharge for 1903 obtained by interpolating between discharge measurements.

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MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the basin of Santa Ynez River at points other than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous measurements in Santa Ynez River drainage basin for 1903–1918.

Date.	Stream.	Tributary to—	Locality.	Discharge.
				Sec.-ft.
May 23, 1918	Santa Ynez River	Pacific Ocean	300 feet above junction with Mono Creek.	18
June 14, 1918	do	do	Just above junction with Mono Creek.	7.0
Aug. 1, 1918	do	do	do	1.0
May 22, 1918	do	do	450 feet above mouth of Santa Cruz Creek.	67
July 30, 1918	do	do	300 feet above mouth of Santa Cruz Creek.	4.6
May 22, 1918	do	do	At San Lucas Bridge, 3¾ miles southeast of Santa Ynez.	104
July 30, 1918	do	do	do	9.6
May 28, 1914	do	do	Solvang	89
May 29, 1914	do	do	do	89.
Sept. 25, 1905	do	do	2½ miles above Lompoc	8.8
Apr. 19, 1906	do	do	do	358.
July 25, 1906	do	do	do	21
Sept. 25, 1906	do	do	do	7.1
Nov. 10, 1906	do	do	1½ miles above Lompoc	10
Dec. 12, 1906	do	do	do	250
Dec. 28, 1913	do	do	3 miles east of Surf	53
Jan. 5, 1914	do	do	do	101
Jan. 9, 1914	do	do	do	65
Jan. 13, 1914	do	do	do	58
Jan. 15, 1914	do	do	do	294
Jan. 18, 1914	do	do	do	22,700
Jan. 19, 1914	do	do	do	3,420
Jan. 20, 1914	do	do	do	1,440
Jan. 21, 1914	do	do	do	1,060
Jan. 24, 1914	do	do	do	577
Apr. 10, 1903	Blue Canyon Creek	Santa Ynez River	Mouth	11.1
Apr. 22, 1903	do	do	do	11.7
Apr. 29, 1903	do	do	do	6.3
May 23, 1918	Mono Creek	do	50 feet above mouth	21
June 14, 1918	do	do	Just above mouth	8.3
Aug. 1, 1918	do	do	do	2.0
Apr. 11, 1903	Amagusa Creek [a]	do	Mouth	6.2
Apr. 15, 1903	do	do	do	4.5
Apr. 21, 1903	do	do	do	7.6
Apr. 23, 1903	do	do	do	6.9
Apr. 28, 1903	do	do	do	6.3
May 23, 1918	Camuesa Creek	do	do	2.2
June 14, 1918	do	do	do	.7
Aug. 1, 1918	do	do	do	.4
Apr. 11, 1903	Ruiz Creek [b]	do	do	5.4
Apr. 15, 1903	do	do	do	4.3
Apr. 21, 1903	do	do	do	7.0
Apr. 23, 1903	do	do	do	5.7
Apr. 28, 1903	do	do	do	4.5
May 23, 1918	Gidney Creek	do	Mouth. Stream enters from south 1 mile below Camuesa Creek.	1.0
June 14, 1918	do	do	do	.24
Apr. 10, 1903	Trail Creek	do	Mouth	1.4
Apr. 22, 1903	do	do	do	2.0
Feb. 11, 1914	Devils Canyon Creek	do	Mouth, near Gibraltar dam site	4.8
Feb. 12, 1914	do	do	do	2.9
Feb. 13, 1914	do	do	do	2.4
Feb. 17, 1914	do	do	do	2.1
Apr. 21, 1914	do	do	do	1.0
Jan. 13, 1917	do	do	do	2.0
Feb. 7, 1917	do	do	do	.65
Feb. 9, 1917	do	do	do	.6
Feb. 10, 1917	do	do	do	.5
Feb. 28, 1917	do	do	do	9.7
Mar. 14, 1917	do	do	do	3.8
May 24, 1918	do	do	do	.6
May 31, 1918	do	do	do	.3
June 14, 1918	do	do	do	.13
May 22, 1918	Santa Cruz Creek	do	300 feet above mouth	20
July 30, 1918	do	do	do	2.3

[a] Believed to be Camuesa Creek on U. S. Geological Survey map.
[b] Believed to be same as Gidney Creek, not named on U. S. Geological Survey map.

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MISCELLANEOUS MEASUREMENTS OF STREAMS IN SANTA BARBARA COUNTY.

The following miscellaneous measurements have been made on streams in Santa Barbara County for 1889–1918:

Miscellaneous measurements of streams in Santa Barbara County, Calif.

Date.	Stream.	Locality.	Discharge.
			Sec.-ft.
Aug. —, 1889	Aguilar Creek		0.12
Do	Armas Creek		.08
Do	Armitas Creek		.04
Do	Arroyo Burro		.23
June 21, 1902	do	100 feet below Moore's north line	.0036
Aug. —, 1889	Arroyo Carnero		.08
Do	Canada del Corral		.15
Do	Canada Lares		.08
Do	Canada Refugio		.31
Do	Canada Verde		.08
Do	Capitan Creek		.23
Do	Carpinteria Creek	1 mile above Placitas road	.08
June 16, 1900	do	do	.003
Sept. 13, 1916	do	Just above Lillingston ranch diversion	.1
Aug. 13, 1897	Cold Spring Canyon Creek	Falls	.08
Sept. 6, 1897	do	do	.06
Sept. 12, 1897	do	do	.09
Oct. 2, 1897	do	do	.09
Dec. 8, 1897	do	do	.09
Jan. 26, 1898	do	do	.11
June 10, 1900	do	do	.00
Mar. 22, 1896	do	do	.00
Aug. —, 1889	do		.23
Mar. 22, 1896	Cold Spring Canyon, City tunnel.		.06
Aug. 13, 1897	do		.66
Sept. 6, 1897	do		.31
Sept. 12, 1897	do		.31
Oct. 2, 1897	do		.28
Dec. 8, 1897	do		.22
Jan. 26, 1898	do		.22
Apr. 19, 1898	do		.22
June 10, 1900	do	Portal	.41
June 14, 1900	do	Station 29+97	.02
Do	do	do	.04
Aug. —, 1889	Dinsmoore Creek		.23
Do	Dos Pueblos Creek		.54
Do	Gobernador Creek		.58
Jan. 9, 1916	do	Proposed dam site	4.2
Do	do	Just above diversion dam	4.2
June 28, 1917	do	200 feet above Gobernador Water Co.'s diversion.	1.4
May 21, 1918	West fork of Gaviota Creek	One-fourth mile above junction with Canada de las Cruces.	1.1
Aug. —, 1889	Maria Ygnacio Creek		.23
Jan. 15, 1888	Mission Creek	200 feet above dam	.93
Jan. 24, 1888	do	do	2.80
Feb. 7, 1888	do	do	1.37
Mar. 16, 1888	do	do	2.23
July 26, 1888	do	do	.36
July 13, 1889	do	do	.43
Aug. —, 1889	do	do	.46
Sept. 1, 1889	do	do	.32
June 11, 1892	do	do	.36
June 17, 1900	do	do	.05
Aug. —, 1889	Padero Creek		.31
Do	Rincon Creek		.12
June 16, 1900	do		.03
Aug. —, 1889	San Jose Creek		.27
Do	San Pedro Creek		.08
June 17, 1900	San Roqui Creek	Above tunnel	.03
Do	do	Below tunnel	.03
May 2, 1900	do	Station 6, opposite tunnel	.04
Do	do	Station 8, opposite tunnel	.02
Do	do	Tunnel of Pacific Improvement Co	.08
June 21, 1902	do	do	.25
Do	do	Below tunnel	.009
Do	do	Station 44, opposite tunnel	.011
Do	do	Station 65, opposite tunnel	.0063

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Miscellaneous measurements of streams in Santa Barbara County, Calif.—Continued.

Date.	Stream.	Locality.	Discharge.
			Sec.-ft.
Nov. 2, 1899	San Ysidro Creek	Above dam	0.06
Dec. 3, 1899	do	do	.15
Mar. 6, 1900	do	do	1.00
Mar. 19, 1900	do	do	.35
June 16, 1900	do	do	.07
Aug. —, 1889	Santa Monica Creek	¼ mile above Fithian's house	.23
June 16, 1900	do		.11
Aug. —, 1889	Tecolote Creek		.27
June 16, 1900	Toro Canyon		.05

SANTA MARIA RIVER BASIN.

GENERAL FEATURES.

Santa Maria River drains the northern slope of the San Rafael Mountains and a smaller area of foothill country north of that range. It flows westward, finally discharging its waters into the Pacific Ocean at Guadalupe, about 25 miles south of San Luis Obispo. Its flow is torrential; it is subject to floods of short duration during the rainy period, but is practically dry during the summer. It has numerous tributaries, the most important of which is the Sisquoc, which enters it about 12 miles above the town of Santa Maria. The country in this basin consists of rolling foothills, except the higher portions of the San Rafael Mountains, which reach elevations of 6,000 to 8,000 feet. The river breaks from the foothills at a point where it is joined by the Sisquoc and flows through the flat country of the Santa Maria Valley for about 25 miles until it joins the Pacific Ocean. The rocks in this basin consist of shale, sandstone, and conglomerate, which are covered by a heavy clay soil. There is a considerable growth of timber on the higher parts of the San Rafael Mountains, but over most of the area the growth of timber is light, and large areas are covered with brush and grass. Pasturage is carried on extensively throughout the basin. There are no diversions along this stream for irrigation, although tunnel work has beeen attempted above Santa Maria for developing underground water, with poor results. Numerous wells in the vicinity of Santa Maria produce considerable water for irrigating land in that locality, the soil being very deep and exceptionally good, susceptable of the highest cultivation. The mean precipitation in this basin is probably about 25 inches. The greatest rainfall occurs on the lower elevations near the coast. The higher elevations receive some snowfall, which melts early in the spring and does not tend to keep up the flow of the streams through the summer.

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GAGING-STATION RECORDS.

SANTA MARIA RIVER NEAR SANTA MARIA, CALIF.

LOCATION.—At Dutard ranch, just below Buckhorn Canyon and above Alamo Creek, 21 miles by highway northeast of Santa Maria, Santa Barbara County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 22, 1903, to December 31, 1905.

GAGE.—Inclined staff fastened to a rock ledge on right bank just below mouth of Buckhorn Canyon.

DISCHARGE MEASUREMENTS.—Made by wading at low and medium stages; high-water measurements by floats near gage.

CHANNEL AND CONTROL.—Sand and gravel; fairly permanent. Right bank is high and rocky; left bank low and covered with scattering trees, not subject to overflow Channel slightly curved for 300 feet above and curved for 1,000 feet below gage.

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Records fair.

Discharge measurements of Santa Maria River near Santa Maria, Calif., for 1903–1906.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1903.				1905.			
Aug. 26	W. B. Clapp		1.0	Feb. 2	E. C. La Rue	3.30	80
Oct. 22	do	1.97	.8	Mar. 6	O. W. Peterson	2.70	47
				21	do	1.20	67
1904.				1906.			
Feb. 18	do	2.65	15.5	Feb. 23	R. S. Hawley	.90	17.9
Mar. 12	J. A. Thompson	3.60	[a] 220	June 6	do	[b] 2.20	11.9
24	do	4.00	[a] 499	Nov. 7	do	1.70	4.9

[a] Float measurements. [b] Zero of gage lowered 2 feet.

Daily discharge, in second-feet, of Santa Maria River near Santa Maria, Calif., for 1903–4.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1903–4.									
1		0.8	0.8	5	7	13	14	3.0	0.2
2			.8	5	7	12	13	3.0	.2
3			.8	5	7	12	8	3.0	.2
4			.9	5	7	10	5	2.8	.2
5		.8	1.0	5	10	.8	4.4	2.5	.2
6			1.5	5	10	7	3.0	2.5	.2
7			1.7	5	10	7	2.5	2.5	.2
8			2.0	5	10	6	2.1	2.5	.2
9			2.0	5	8	6	1.5	2.0	.2
10		.8	2.0	5	8	6	1.5	1.5	.2
11			2.3	5	7	18	1.5	1.0	.2
12			2.5	5	7	220	1.5	1.0	.2
13			2.6	5	10	53	1.5	1.0	.2
14			2.8	5	10	140	1.5	.5	.2
15		.8	2.9	5	9	27	1.5	.5	.2
16			3.0	5	70	16	1.5	.4	.2
17			3.0	5	18	13	1.5	.3	.2
18			3.2	7	16	10	1.5	.2	.2
19			3.2	7	13	7	3.0	.2	.2
20		.8	3.2	7	12	10	7	.3	.2
21			3.4	7	10	8	5	.3	.2
22	0.8		3.4	7	10	8	5	.3	.2
23	.8		3.4	7	9	53	3.0	.3	.2
24	.8		3.6	7	8	27	3.0	.3	.2
25	.8	.8	3.8	7	7	53	3.0	.3	.2
26	.8		4.2	7	7	18	5	.3	.2
27	.8		4.4	7	7	22	7	.2	.2
28	.8		4.4	7	27	13	6	.2	.2
29	.8		4.6	7	13	40	3.0	.2	.2
30	.8	.8	4.6	7		18	3.0	.2	.2
31	.8		4.8	7		13		.2	.2

NOTE: No record July 1 to Sept. 30.

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Daily discharge, in second-feet, of Santa Maria River near Santa Maria, Calif., for 1903–4—Continued.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1904.				1904.				1904.			
1	450	10	11	11	400	10	14	21	9	11	18
2	175	10	12	12	175	11	16	22	8	11	18
3	175	10	12	13	53	12	16	23	8	11	19
4	175	10	13	14	10	12	17	24	8	11	18
5	175	10	13	15	10	11	17	25	8	11	19
6	175	10	14	16	9	11	17	26	9	11	20
7	242	10	14	17	9	11	17	27	9	11	20
8	325	10	14	18	9	11	18	28	9	11	18
9	348	10	14	19	9	11	17	29	10	11	18
10	362	10	13	20	9	11	18	30	10	11	18
								31	10	.....	53

Monthly discharge of Santa Maria River near Santa Maria, Calif., for 1903–1905.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.			Maximum.	Minimum.	Mean.	
1903–4.					1904–5.				
October 22–31	0.8	0.8	0.8	16	February	1,915	6	361	20,050
November	.8	.8	.8	48	March	10,000	6	574	35,290
December	4.8	.8	2.8	172	April	18	10	14.5	863
January	7	5	5.9	363	May	74	3	15.5	953
February	70	7	12.2	702	June	6	4	5.9	352
March	220	6	28.2	1,734	July	6	3	5.0	307
April	14	1.5	4.0	238	August	3	1	2.7	166
May	3	.2	1.1	68	September	6	1	1.6	96
June	.2	.2	.2	12	The year	10,000	1	95.0	67,960
The period	.....	.....	.....	3,350	1905.				
1904–5.					October	8	3	5.4	332
October	450	8	109	6,702	November	14	8	8.6	512
November	12	10	10.7	637	December	14	10	11.7	719
December	53	11	17.3	1,064	The period	.....	.....	.....	1,560
January	122	13	22.5	1,384					

MISCELLANEOUS MEASUREMENTS.

Measurements of stream flow in the Santa Maria River basin at points others than those at which gaging stations have been maintained are recorded in the following table:

Miscellaneous measurements in Santa Maria River drainage basin.

Date.	Stream.	Tributary to	Locality.	Discharge.
				Sec.-ft.
Sept. 9, 1911	Santa Maria River	Pacific Ocean	Wagon bridge at Santa Maria	Dry
Aug. 25, 1903	Sisquoc River	Santa Maria River	Sisquoc ranch	1.1
Oct. 23, 1903	do	do	do	Dry

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FLOODS.

RECORDS OF FLOODS.

Southern California is subject to sudden and severe floods. The streams are comparatively short and grades are very steep from the headwaters to the mouths of the canyons. The channels from the canyons to the sea are usually broad, shallow, and comparatively flat and do not have sufficient capacity to carry the larger floods. As a result the streams overflow their banks and readily form new channels in the porous, sandy soil. (See descriptions of river basins.)

There are three important factors depending on precipitation in the production of floods in southern California—the interval between the last rain and the flood, the intensity of the rainfall, and the total rainfall for the storm.

The following table shows the frequency of floods in southern California since 1878:

Floods in vicinity of Los Angeles, Calif., for the 37 years 1878–1914.[a]

Date.	Precipitation in 24 hours (inches).	Flood character.	Remarks.
Jan. 16, 1878	1.16	Light	Bridges washed away.
Feb. 19, 1878	1.33	Moderate	Do.
Dec. 20, 1879	4.34	do	Mountain streams swollen. Bridges washed away. Railway travel suspended.
Dec. 20, 1880	2.26	do	Streets almost impassable.
Feb. 17, 1884	3.56	Heavy	Severe flood. Great amount of damage. (Harbor silted.)
Mar. 9, 1884	2.67	do	Los Angeles River in flood. Houses washed away.
Jan. 19, 1886	3.77	do	Lower portion of city under water. Flood quite severe. Several lives lost.
Feb. 16, 1887	3.94	Moderate	Severe flood, but not so bad as last year. Lower part of city flooded.
Jan. 4, 1888	3.39	do	Several washouts in vicinity.
Dec. 23, 1888	2.72	do	Many washouts. Streets flooded. Damage not commensurate with severity of storm.
Mar. 17, 1889	2.53	Light	Washouts. Streets in bad condition. River did not overflow.
Oct. 23, 1889	3.62	Moderate	Washouts on railroads. Unprecedented rainfall for this time of year. Streets flooded.
Dec. 12, 15, 1889	4.30	Heavy	Traffic paralyzed by washouts. Streets flooded.
Dec. 25, 1889	3.82	do	The flood was scarcely less severe and disastrous than that of 1884. (Harbor silted.)
Jan. 26, 1890	4.17	do	Flood. Streets turned into rivers. Traffic suspended. (Harbor silted.)
Feb. 23, 1891	2.75	Moderate	Many washouts. Bridges carried away. River high.
Mar. 21, 1893	2.82	do	Streets flooded.
Dec. 21, 1894	1.33	Light	Do.
Jan. 17, 18, 1895	1.73	do	Do.
Dec. 28, 1896	1.22	do	Do.
Jan. 14, 15, 1897	1.57	do	Do.
Feb. 20, 1897	2.02	do	Do.
Nov. 21, 1900	3.79	Moderate	Flood.
Feb. 6, 1901	2.55	Light	Streets flooded.
Oct. 27, 1901	1.79	do	Streets flooded. Railroad traffic temporarily suspended.
Nov. 11, 1902	1.95	do	Streets flooded.
Mar. 25, 1903	3.35	Moderate	Do.
Feb. 4, 1905	2.25	Light	Do.
Mar. 13, 1905	2.41	Moderate	San Gabriel and Santa Ana rivers very high. Streets flooded. Traffic interrupted.
Jan. 19, 1906	2.20	Light	Streets flooded but no serious damage.
Mar. 25, 1906	1.75	Moderate	Los Angeles River higher than for many years. Streets inundated.
Jan. 7, 8, 1907	1.64	Light	Streets flooded.
Jan. 24, 1908	1.76	do	Do.
Jan. 21, 22, 1909	3.17	Moderate	Streets flooded. Traffic interrupted.
Dec. 31, 1909	1.99	do	Streets flooded.
Jan. 28, 1911	2.97	do	Do.
Mar. 9, 1911	1.99	Heavy	Streets flooded. Traffic interrupted. (Harbor silted.)
Mar. 9, 12, 1912	2.04	Light	Streets flooded.
Feb. 24, 1913	5.12	Moderate	Streets flooded. Traffic interrupted.
Jan. 25, 1914	2.60	do	Do.
Feb. 18, 1914	4.26	Heavy	Streets flooded. Traffic interrupted. Bridges washed away. (Harbor silted.) See Pl. XVII, *A*, p. 492.

[a] Carpenter, Dr. F. A., Flood studies at Los Angeles: Monthly Weather Review, vol. 42, No. 6, June, 1914.

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To make the record complete the floods of January 17 and 27, 1916, should be added to the above table. Records of run-off, precipitation, damage to property, and general information regarding these floods were published by the Geological Survey in Water-Supply Paper 426, "Southern California floods of January, 1916," by H. D. McGlashan and F. C. Ebert. The following table gives the maximum discharge, for the flood of 1916 for most of the important streams in southern California:

Crest discharges, in second-feet, of streams in southern California for January, 1916.

Station.	Date.	Time.	Gage height (feet).	Drainage area (square miles).	Discharge.	Discharge per square mile.
Cottonwood Creek at Morena reservior	Jan. 27	4-6 p. m.		120	15,356	128
Otay River at Lower Otay reservoir	do			98.6	[a] 23,500	238
Jamul Creek near Otay	do			69.8	18,100	259
Sweetwater River near Descanso	do			43.7	9,870	226
Sweetwater River near Dehesa	do			112	21,295	217
Sweetwater River at Rudolph ranch	do			135	27,530	201
Sweetwater River near Jamacho	do			172	43,002	250
Sweetwater River at Sweetwater reservoir.	do	4.30-5.30 p. m.		181	45,500	251
San Diego River at diverting dam	Jan. 18	6 a. m.		102	4,710	46
Do	Jan. 28	6 p. m.		102	15,800	155
San Diego River at Capitan Grande dam site.	Jan. 27			189	[b] 36,300	192
San Diego River near Santee	do		25.1	375	70,200	187
San Diego River at San Diego	do	7 p. m.		434	75,000	173
Boulder Creek at Cuyamaca reservoir	do	6 p. m.		12	2,393	199
San Vicente Creek at mouth	do			74.9	18,000	248
Switzer Canyon at San Diego	do	7 a. m.		3.55	668	188
Santa Ysabel Creek near Mesa Grande	Jan. 17			53.4	10,600	199
Do	Jan. 27	Noon	11	53.4	21,100	395
Santa Ysabel Creek near Ramona	Jan. 17	9 p. m.		110	14,300	130
Do	Jan. 27	7 p. m.		110	28,400	258
San Dieguito River at Carroll dam site	do	1-3 p. m.	21.2	299	72,100	241
Santa Maria Creek near Ramona	do	5 p. m.	15.9	57.3	7,140	125
San Luis Rey River near Mesa Grande	Jan. 17	1.45 p. m.	12.8	209	24,400	117
Do	Jan. 27	4.30 p. m.	18	209	58,000	280
San Luis Rey River near Pala	do		18.1	322	75,000	233
San Luis Rey River at Oceanside	Jan. 17			565	40,000	71
Do	Jan. 27	9.30 p. m.		565	95,600	169
Santa Ana River near Mentone	Jan. 27			189	29,100	154
Santa Ana River at San Bernardino	do				40,000	
Lytle Creek at San Bernardino	Jan. 18	9.40 a. m.			16,000	
San Jacinto River near San Jacinto				108	30,000	278
San Jacinto River near Elsinore	Jan. 28	11 a. m.	19	717	14,000	19.5
South Fork of San Jacinto River at Hemet reservoir.	Jan. 27	4 p. m.		65.8	9,550	145
San Gabriel River near Azusa	Jan. 18	7 a. m.	12	222	40,000	180
Los Angeles River at Los Angeles					7,268	
Los Angeles River near Dominguez Junction.					31,113	
Arroyo Seco near Pasadena	Jan. 17	9.30 a. m.	9.3	16.4	3,150	192
Arroyo Seco at Los Angeles					6,215	
Sespe Creek near Sespe	Jan. 17		18.7	216	18,600	

[a] Reported by George Cromwell, city engineer, San Diego, Calif. (See Engineering News, vol. 75, No. 15, p. 718.)
[b] Mean of two estimates computed from cross sections and slope data.

FLOOD OF 1914.[1]

DISTRIBUTION OF RAINFALL.

From February 15 to 25, 1914, precipitation was general over a large part of California. In the vicinity of Los Angeles the storm period extended from February 18 to 21, the total precipitation in

[1] Abstracted from reports of the board of engineers for flood control to the board of supervisors, Los Angeles County, and records of the United States Weather Bureau.

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the four days exceeding 19 inches at stations in the mountains and about 3 inches on the coast. This storm was preceded by heavy general precipitation in January that thoroughly soaked the ground. The monthly departure from the normal for January was much greater than that for February, but the precipitation in January covered 10 to 12 days, whereas that for February occurred within 4 days. The hourly distribution of the rainfall as recorded by the United States Weather Bureau at the station at Los Angeles and the total rainfall for the storm at 40 stations in the Los Angeles district are shown in the following tables:

Hourly precipitation, in inches, for Feb. 18–21, 1914, at Los Angeles, Calif.

[From unpublished records of United States Weather Bureau.]

A. M.

Date.	1	2	3	4	5	6	7	8	9	10	11	12
Feb. 18	0.07	0.06	Tr.	0.01	0.08	0.24	0.33	0.07	0.11	0.15	0.02	0.06
19	.01	.01	.01	.02	.07	.03	Tr.	.....	.....	.....	Tr.	.01
20	.07	.11	.04	.11	.04	Tr.	Tr.	.....	.....	.....	Tr.	.....
21	.02	.06	.03	.01	Tr.	.02	.01	.....	.....	.....	.....	.....

P. M.

Feb. 18	0.50	1.49	0.29	0.28	0.35	0.04	0.08	0.01	0.01	Tr.	Tr.	0.01
19	.....	.....	.....	.....	.....	Tr.	.02	.02	.22	.25	.05	.22
20	.....	Tr.	.24	.03	.01	.21	.36	.25	.15	.01	.06	Tr.
21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Total precipitation for storm of Feb. 18–21, 1914, at stations in the vicinity of Los Angeles, Calif.

[From flood studies at Los Angeles, by Dr. Ford A. Carpenter, in Monthly Weather Review, vol. 42, No. 6, June, 1914.]

Station	Rainfall.	Station.	Rainfall.
	Inches.		*Inches.*
Avalon	3.45	Palo Verde	3.87
Azusa	13.26	Pasadena	11.44
Bear Valley dam	10.83	Pomona	9.60
Chino	4.81	Redlands	4.26
Claremont	10.92	Redondo	3.51
Cleghorn Canyon	17.85	Riverside	2.79
Corona	4.31	San Antonio Canyon	12.25
Devil Canyon	8.63	San Bernardino	4.71
East Highlands	4.85	San Dimas	11.29
Fillmore	6.44	San Fernando	8.88
Garvanza	9.41	San Pedro	2.03
Highland	5.68	Santa Monica	5.50
Hollywood	6.75	Sierra Madre	15.56
Long Beach	3.24	Squirrel Inn	16.29
Los Angeles	7.07	Tustin	3.52
Mill Creek	11.10	Valyermo, post office	5.57
Mount Lowe	19.20	Venice	5.16
Mount Wilson	19.40	Ventura	10.21
Orange	3.55	Walnut	6.96
Palm Springs	3.90	Whittier	5.02

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DAMAGE DUE TO FLOOD.

The storm of February 18–21, 1914, coming when the ground was already thoroughly soaked, produced a flood in the vicinity of Los Angeles that caused the most damage, but was not the greatest in history. The loss by flood in Los Angeles County in 1914 has been estimated by the board of engineers for flood control at $10,000,000, exclusive of damage to the harbor, due to silting.

DETERMINATION OF FLOOD FLOW.

The flood left high-water marks which were still visible when the board of engineers for flood control was organized in April, 1914, and steps were taken immediately to obtain data from which the flood flow at various points could be computed. The appearance of the streams after this flood is shown by Plate XVII (p. 492). Under the direction of J. B. Lippincott, of the board of engineers for flood control, sections were selected and data and information collected for computing flood flow. The results obtained for sections on Los Angeles and San Gabriel rivers and tributaries are shown in the following table:

Estimated flood discharge of streams in vicinity of Los Angeles, Calif., from storms of January and February, 1914.

Los Angeles River basin.

Stream.	Location of section.	Drainage area.		Value of "n."	Discharge in second-feet.	
		Square miles.	Per cent mountainous.		Flood.	Per square mile.
Los Angeles River	200 feet below bridge on Lankershim Boulevard.	304.3	72.6	0.0375	16,780	55.2
Do	200 feet below filtration galleries	334.8	72.4	.0375	24,420	73.2
Do	Below Main Street Bridge	534.1	68	.025	31,140	58.2
Pacoima Creek	1,000 feet below mouth of canyon	30	100	.05	5,400	180
Big Tujunga Canyon	Mouth of canyon	118	100	.0375	13,600	115
Sunland Wash	Below road from Sunland up big Tujunga Canyon.	6.5	60	.0275	4,620	712
Little Tujunga Canyon	Below bridge on road from San Fernando up Tujunga Valley.	22.3	100	.03	4,100	184
Verdugo Creek	¼ mile below Verdugo Park	21.9	.....	.03	7,700	352
Arroyo Seco	About 300 feet below Devils Gate	30.5	88.5	.025	11,400	374
Do	About 500 feet below the Colorado Street Bridge.	38.6	75.2	.04	14,136	366
Do	North end of San Pasqual Avenue	42.7	70.3	.045	7,610	178
Do	Between Pasadena Avenue and Santa Fe Ry. bridge near Avenue 36.	49.5	.....	.025	5,880	119

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Estimated flood discharge of streams in vicinity of Los Angeles, Calif., from storms of January and February, 1914—Continued.

San Gabriel River basin.

Stream.	Location of section.	Drainage area.		Value of "n."	Discharge in second-feet.	
		Square miles.	Per cent mountainous.		Flood.	Per square mile.
San Gabriel River	2 miles above mouth of San Gabriel Canyon.	220	100	0.035	25,260	115
Do	Below mouth of Rogers Canyon	226.68	100	.035	26,680	117
Do	Dunlap road crossing, ¾ mile below Whittier Boulevard Bridge.	.....	.....	.030	16,000	.....
Sawpit Canyon	300 feet above point where wash begins to spread, northeast of Monrovia.	7.37	100	.05	4,070	550
Santa Anita Canyon	500 feet above Foothill Boulevard below junction of little Anita Canyon.	18.17	100	.045	3,168	174
San Dimas Canyon	Mouth of canyon	18.58	100	.035	2,950	159
Big Dalton Canyon	Mouth of canyon, opposite spillway of Glendora water supply.	7.56	100	.05	1,070	142
Little Dalton Canyon	Mouth of canyon	3.34	100	.05	1,018	305
Eaton Wash	Between Foothill Boulevard and Santa Fe Ry. bridge.	12.5	82.4	.035	4,590	367
Rio Hondo	About 500 feet below Foster Bridge on Downey Boulevard.	.....	.....	.025	20,930	.....

Ballona Creek basin.

Ballona Creek	About 500 feet below the wagon bridge on Higuera or Valley road.	.....	.....	0.035	6,480	.....

The following measurements have recently been furnished for publication by F. C. Finkle, consulting engineer, Los Angeles, Calif.:

Rio Hondo at El Monte.—A measurement was made with a current meter at bridge west of El Monte January 30, 1914, discharge 476 second-feet. There was no appreciable discharge in the channel of San Gabriel east of El Monte.

Rio Hondo at Whittier Boulevard bridge.—A measurement was made by floats on February 20, 1914. The channel was 630 feet wide; area of cross section, 3,377 square feet; discharge, 19,959 second-feet. The stage was about 1.1 feet lower than at maximum stage. The slope at the crest of the flood was measured from 500 feet above to 500 feet below bridge, and found to be 2.39 feet. The section of channel was described as follows:

Westerly 155 feet, the channel contained considerable small brush, which was not washed out, but bent over by its velocity, making the tops of much of it visible in the stream. The remaining 35 feet to the span bridge was sand and gravel bottom. This westerly portion of 190 feet altogether was a pile bridge. There were three 70-foot spans beyond this, through which the water moved very freely, but the bottom of the channel was rocky and irregular and some eddies were caused by the obstruction of the bridge piers. Beyond the span the banks had washed away and there was water 130 feet wide flowing on a sandy surface.

The value of "n" in Kutter's formula was selected as 0.04, giving a discharge of 26,806 second-feet for the crest of the flood.

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The following results were obtained from slope measurements and cross sections taken March 17, 1914:

Flood measurements.

Stream.	Area (square feet).	Mean hydraulic radius (feet).	Slope.	"n."	Mean velocity (feet per second.)	Discharge (second-feet).
San Jose Creek near Old Workman Mill ranch	1,162	4.8	0.00304	0.03	7.81	9,073
Walnut Creek near Puente	626	4.6	.00202	.03	6.19	3,875
San Dimas Creek northwest of Bassett	585	3.4	.003998	.025	8.50	4,970

Lytle Creek at Foothill Boulevard.

Date.	Time.	Discharge (second-feet).	Date.	Time.	Discharge (second-feet).
Feb. 19, 1914	5 a. m.	4,711	Feb. 20, 1914	4 p. m.	812
Do	8.30 a. m.	1,088	Feb. 21, 1914	12.15 a. m.	15,958
Do	5 p. m.	743	Do	6.45 a. m.	1,555
Feb. 20, 1914	10.30 a. m.	812	Do	4.30 p. m.	1,003

Lytle Creek at mouth of canyon.

Feb. 1, 1914	12 a. m.	118	Feb. 20, 1914	5 p. m.	4,313
Feb. 10, 1914	10 a. m.	53	Do	10.30 p. m.	9,562
Feb. 19, 1914	10.30 a. m.	977	Feb. 23, 1914	11.30 a. m.	727
Do	5 p. m.	771	Feb. 28, 1914	12 a. m.	290
Feb. 20, 1914	7 a. m.	14,740			

CAJON CREEK NEAR DEVORE, CALIF.

A gaging station was maintained during February, 1914, on Cajon Creek at Glen Helen farm, about a mile above Devore. At this point the stream flows near the north side of the wash and against the steep bank. Gage heights were observed throughout the month and discharge measurements made by current meter or computed from slope and cross-section data. The discharge shown in the following table was averaged over periods between which there was no radical variation in flow.

Discharge of Cajon Creek near Devore, Calif., for February, 1914.

	Second-feet.
Feb. 1, midnight to Feb. 17, noon	46
Feb. 17, noon to Feb. 19, 10.30 a. m.	411
Feb. 19, 10.30 a. m. to Feb. 20, midnight	700
Feb. 20, midnight to Feb. 20, 2.30 p. m.	1,650
Feb. 20, 2.30 p. m. to Feb. 20, 7.00 p. m.	3,500
Feb. 20, 7 p. m. to Feb. 20, 11 p. m.	6,330
Feb. 20, 11 p. m. to Feb. 21, 1.30 a. m.	8,360
Feb. 21, 1.30 a. m. to Feb. 21, 5 a. m.	6,330
Feb. 21, 5 a. m. to Feb. 21, 7.30 a. m.	3,500
Feb. 21, 7.30 a. m. to Feb. 22, noon	1,423
Feb. 22, noon to Feb. 28, midnight	123
Mean daily discharge	332
Total run-off, in acre-feet	18,400

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FLOOD OF 1891.

The following records are abstracted from notes furnished by F. C. Finkle, consulting engineer, Los Angeles, Calif. All measurements were made and data collected by Mr. Finkle or by assistants under his direction.

Lytle Creek at San Bernardino, Calif.—The maximum stage at foot of F Street occurred between 8 and 8.30 a. m., February 23. As the crest of the flood was passing stakes were set along the northeast bank to mark extreme high water. On February 24 the slope was measured over a distance of 530 feet and a cross-section taken. Channel conditions were explained as follows: "Channel irregular but deepest in middle, and banks slightly crooked; much willow growth, plenty of large stones mixed with coarse gravel and large quantities of drift carried by water during flood." The discharge was computed as follows: Area, 3,617 square feet; mean hydraulic radius, 3.2 feet; total slope of water surface, 5.49 feet; "n" in Kutter's formula selected as 0.04; coefficient C, 45.6; mean velocity, 8.3 feet per second; discharge, 30,020 second-feet.

Santa Ana River at mouth of canyon, opposite Morton Creek, near Mentone, Calif.—In the spring of 1892 the flood marks of February 23, 1891, were still distinct. The slope was measured over a distance of 1,000 feet and a cross-section taken. The condition of the channel was described as follows:

Channel irregular deepest portion shifting from left toward right bank within section 1,000 feet in length; banks not straight but well marked by driftwood on large boulders and in some sycamores and alders at margin of flood channel. Channel filled with large boulders from 1 to 4 feet in diameter and smaller rocks with much gravel packed between them; a few irregular gravel bars at upper right-hand side and lower left-hand side of 1,000-foot section, but top of these bars 2 feet or more below high-water mark indicated by drift on both sides of section.

The discharge was computed as follows: Area, 4,712 square feet; mean hydraulic radius, 6.44 feet; slope, 0.01102; "n" in Kutter's formula, selected as 0.05; coefficient C, 42.78; mean velocity, 11.4 feet per second; discharge, 53,700 second-feet.

Temescal Canyon above Cajalco Creek at Harrington Narrows.—On May 7, 1891, the flood marks of February 23, 1891, were examined for a distance of 620 feet, the slope was measured, and a cross-section was taken. Channel conditions were described as follows: Channel contained a great deal of growing timber in addition to being rocky and irregular. Only the small trees and brush were washed out and none of the large trees were destroyed, as they were standing at the time this survey was made.

The discharge was computed as follows: Area, 2,636 square feet; mean hydraulic radius, 6,937 feet; slope, 0.00824; "n" in Kutter's formula selected as 0.05; coefficient C, 43.5; mean velocity, 10.4 feet per second; discharge, 27,420 second-feet.

Elsinore Lake overflowed heavily on February 22 and 23, 1891, and there was still some discharge on May 7, 1891.

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San Luis Rey River 1 mile above Bonsall.—A few weeks after the flood the slope was measured over a distance of 1,000 feet on both sides of the stream and a cross-section was taken with a hand level. The channel was wide and had a sandy, gravelly bed. Practically all vegetation had been washed out except on a few small bars which were covered with willows and near the edge of the stream where the grass and willows had been laid down by the flood but not washed out. The flow had not been regular and parallel to the banks of the stream, but showed evidence of many cross currents and eddies.

The discharge was computed as follows: Area, 17,242 square feet; mean hydraulic radius, 7.2 feet; slope, 0.0028; "n" in Kutter's formula was selected as 0.04; coefficient C, 52.3; mean velocity, 7.43 feet per second; discharge, 128,100 second-feet.

The following observations were noted by Mr. Finkle.

From the 17th and 18th of February to the 21st of February, inclusive, there was considerable rain in the valley with heavy snow in the mountains, extending from the San Gabriel River to the Mexican line. The snowfall was the heaviest at three points, namely, in the area from San Antonio Peak to San Jacinto Peak, from the Santa Ana Mountains near Corona to the San Luis Rey River, including Palomar Mountain, and in the watershed tributary to the Tia Juana River near the Mexican boundary. I recall distinctly that when the warm rain on February 22 began the snow covered the mountains near San Bernardino and Riverside down to the very foothills, reaching, in some places, as low in elevation as 1,200 feet above sea level.

On February 27, 1891, the temperature seemed to change and the rain became much warmer so that the accumulated snow was suddenly melted and brought down the great flood, the peak of which culminated on the morning of the next day. In press clippings, which I have in my scrapbook, I find that the San Bernardino and Riverside papers speak of snow down to the valley line on the morning of February 19, 1891. They also mention a rainfall of 4.53 inches in San Bernardino on February 21 and 22, and 17 inches of rainfall at Big Bear Valley in 24 hours on February 22. Other press clippings show the complete isolation of San Bernardino and Riverside from outside communication for a long time after this storm, and I personally recall that all railroad and highway bridges between Los Angeles and San Bernardino were out for at least two weeks.

There was an extremely violent flood on the San Gabriel River, but I have no data from which to compute its volume. I recall, however, the first trip I made to Los Angeles, after communication by rail was restored, that the débris cone of the San Gabriel was completely littered with drift of all kinds, and that a large black bear, drowned and washed down in the flood, was lodged in a large amount of débris near the Santa Fe Railway crossing over the San Gabriel, and that the new channel of the river west of El Monte was cut to a width of a great many hundred feet in that storm, where it had only been about 75 feet before. At the Santa Fe and Southern Pacific crossings the San Gabriel had completely washed them out for a long distance across the country, requiring about two weeks to be replaced. The town of Azusa was entirely washed away and was reestablished in its present location after the flood.

The flood of February 23, 1891, was not as large in the Los Angeles River as the previous flood of December, 1889, but in every stream east of the Los Angeles River it was much larger. This is due to the fact that the flood of December, 1889, was from heavy rainfall coming suddenly, while the flood of February 23, 1891, was due to accumulated snow, melted by the warm rain, having much less precipitation than the storm of 1889. This heavy snowfall was mostly wanting on the watershed of the Los Angeles River, which explains why the flood was so much less severe than on other streams lying farther east.

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